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ACUTE ARTHRITIS OF INFANTS.[1]

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Among the many acute diseases of bones, probably none has attracted more attention of late years than osteomyelitis. This is largely due to the fact that with our advanced knowledge of bacteriology many points in its etiology and causation have been cleared up, and at the same time our methods of treatment are more scientific and accurate.

Acute arthritis of infants is a disease which may properly be described under the acute infectious processes of bone. The term was first used by Jules Teilhard La Terrisse in his thesis presented to the Faculty of Medicine of Paris for the degree of doctor of medicine,[2] in 1833. He reports three cases in children of three, six, and nine days respectively, and on autopsy in each case found pus in several of the joints. In one case there were also several abscesses in the lung. He believes the joint collections of pus were metastatic, and says that M. Dance, in an article on phlebitis, has cited similar cases.

In 1874, Mr. T. Smith, surgeon to St. Bartholomew's Hospital, describes the affection and reports twenty-one cases, under the name "Acute Arthritis of Infants."[3] Barwell, in his treatise on diseases of the joints, describes the disease under consideration as "Peracute Articular

[1] Read at the meeting of the American Orthopædic Association, 1889.

[2] Observations d'Arthritis aiguës chez l'Enfant nouveau-né, etc. Thèse, etc., 1833.

[3] Acute Arthritis of Infants, by T. Smith. St. Bartholomew's Hospital Reports, 1874, vol. x.

Ostitis," and also employs the term epiphysitis.[1] Klose, from the frequent separation of the epiphysis from the rest of the bone, was induced to describe it as "Epiphysentrenung," and also meningo-osteo-phlebitis.[2] Chassaignac, Demme, Lannelongue, and others have described it as osteomyelitis. Krause, in an article on "Acute Purulent Synovitis in Infants," describes it, and says that Volkmann has seen some fifty cases[3] and that he calls it "Catarrhal Inflammation of Joints in Infants." He did not believe that other diseases acted as exciting causes, and most of his cases terminated favorably. He found a coccus resembling the staphylococcus pyogenes of Rosenbach, and the diphtheritic coccus of Löffler. Stromeyer, in a memoir on "Osteitis Articularis Peracuta," speaks of it, and it is from him that Barwell takes his definitions and terms. MacNamara, in the first edition of his work, writes of "Acute Epiphysitis," but in the later edition,[4] owing to the fact that exception has been taken to the term "epiphysitis" as applied to the disease we are considering, calls it "suppurative osteitis in growing bone," and as synonyms gives "acute osteitis of childhood, suppurative periostitis, juxta-epiphysial osteitis, acute necrosis of childhood, and osteomyelitis during growth of bones"—these are in addition to some of the various names we have already considered. Thomas Jones,[5] in his work on diseases of the bones, does not give a separate chapter to acute arthritis of infants, but treats of it under "Acute Osteomyelitis," and under "Necrosis of Epiphyses and of Articular Extremities of Bones." Among the earlier writers quite a confusion exists as to names. Schutzenberger, in 1853, wrote on "Rheumatic Periostitis;" Chassaignac, in 1854, on "Acute Sub-periosteal Abscess;" Becker, in 1858, on "Phlegmonous Periostitis;" Garnet, in 1862, on "Juxta-epiphyseal Osteoperiostitis," Giraldès on "Phlegmonous Periostitis," and Huber on "Arthritis Suppurativa Multiplex Rheumatica bei Kinde."

As the earlier authors endeavored by the terms used to describe the disease, so the term acute arthritis of infants, which was first used by Terrisse, and then brought into prominence by Smith, seems to meet the requirements more fully than the others, and should be retained, I think.

In considering the question of disease affecting the articular ends of long bones in infants, it is necessary that we recall certain differences in those structures as compared with the conditions which exist in later life.

[1] A Treatise on Diseases of the Joints, by Richard Barwell. American edition, 1881.
[2] Präger Vierteljahrschrift, 1858, Klose.
[3] Berliner klinische Wochenschrift, 1884, No. 43, Krause.
[4] Diseases of Bones and Joints, by C. N. MacNamara. London, third edition, 1887.
[5] Diseases of the Bones, by Thomas Jones. London, 1887.

Mr. MacNamara, on the subject of "epiphysial cartilage," says:

"During early life, while the temporary cartilage is becoming calcified, and subsequently replaced by bone, the epiphyses remain unossified. The epiphysial cartilages increase in all directions by interstitial growth. The bones increase in length by means of ossification at that part of the epiphysial cartilage which is in proximity with the diaphysis.

"Osseous tissue is in the epiphyses, as in the diaphyses, preceded by calcification of the cartilage; then the production of osteoblasts, the removal of the cartilage matrix, and development of bone. In the epiphyses, however, the process of ossification commences in the centre of the cartilage and advances from within outward; a disk of cartilage ultimately separating the osseous structure of the diaphysis from that of the epiphysis. . . .

"But after the ossification of this cartilage is completed—that is, from adult life onward—the space which the epiphysial cartilage previously occupied is represented by a line of osseous tissue which can be demonstrated, and which separates the longitudinal system of lamellæ of the epiphysis from that of the diaphysis. The circulation of the blood is carried on unequally in these different parts of the bone, the epiphyses being the least vascular part of a fully formed bone.

"In early life the line of newly formed bone, which is in proximity with the diaphysial side of the epiphysial cartilage, is extremely vascular. Not only do numerous vessels penetrate this part from the diaphysis, but there is a venous plexus surrounding the bone in this situation. However carefully we inject a full-grown fœtus, it is difficult to prevent the extravasation of the injection into the tissues immediately surrounding the junction of the diaphysis and epiphysis. The cells of the epiphysial cartilage next to the diaphysis pass through changes similar to those I have described as occurring at a centre of ossification, so that at this vascular line there is a constant formation of calcified cartilage, and therefore of a very friable structure, and its replacement by osseous tissue.

"The circumference of the epiphysial disk of cartilage is prolonged over the outer surface of the diaphysis, passing into and forming the deep layers of the periosteum. In fact, the osteoblasts of the deep layer of the periosteum in the growing bone are derived from the protoplasm contained in the cells of the epiphysial cartilage. It follows that as the various bones of the body arrive at that period of growth when the epiphysial disk has formed, the extremities of their diaphysis are enclosed in a cup-shaped piece of this cartilage; in this way, if pus forms in the soft structures at the extremities of the diaphysis, it is directed outward by the cartilage into the deep layer of the periosteum. Matter collecting at the extremity of the diaphysis is prevented by the cartilage from extending into the epiphysis or into the synovial cavity of the neighboring joint.

"In infant life, before the epiphysial disk of cartilage has formed, the centre of ossification of the epiphysis is, however, contained within the synovial membrane; so that, if this isolated portion of bone becomes inflamed, suppurative synovitis is almost sure to occur; for it is interesting to note that the epiphysial cartilage is prolonged during fœtal life into the tissues which are developing into the future synovial membrane; this membrane may be considered as a modified form of periosteum passing from one bone to the other."

Kölliker and others have shown that the extremity of the diaphysis grows quickest whose epiphysis remains the longest separated, demonstrating Professor Humphrey's law, that the growth of bone is chiefly in the direction of its nutrient artery. The condition of the medulla and the remainder of the bone need not be entered into, as we have simply introduced so much of the anatomy as was essential to a clear under-

standing of the disease in question, and to show why in infants the symptoms must necessarily be somewhat different from those in adults.

With this knowledge of the subject the pathology is more readily understood. Of course, in an article of this character, it is not proposed to go into the entire subject of osteomyelitis.

PATHOLOGY.—The pathology of acute arthritis of infants has not been dwelt upon at any length by the earlier writers, although all of them look upon it as a pyæmia of bone. Howard Marsh[1] says the pathology of the affection is obscure. It begins, usually, in the epiphysis as a hyperæmia or congestion of the bloodvessels situated within this structure, or in some cases in the dividing line between epiphysis and diaphysis, or rarely in the diaphysis. This congestion is soon succeeded by inflammation and the rapid production of pus. The pus soon enters the joint cavity, though in many cases the opening is no larger than a mere pin-hole. Mr. T. Smith says that in several of his cases that was entirely overlooked until after he had made sections of the bone, and thus discovered the opening. The pus instead of entering the joint, or even after the joint has been invaded by the breaking down of the tissues beneath the epiphyses, may burrow along under the periosteum and open through it at a point remote from the joint—a fact to which Mr. Morrant Baker has called special attention, and also MacNamara. This abscess is "sub-articular" at the beginning. In some instances, before the pus escapes to the surface, it may follow down through the medulla, which, in infants, is not a distinct canal, and thus invade a neighboring joint or produce the same effect by dissecting down under the periosteum along the shaft. Again, it may be absorbed into the general system and an abscess occur by metastasis in some distant joint, in the soft parts, or in some of the viscera.

The character of the pus varies considerably. It may be thick, yellowish, and sticky and in some cases tinged with blood, or dark brown in color and thin. The time at which it is examined, no doubt, influences its character, for we might reasonably expect to find it different when confined to the bone alone, or when involving the joint and the adjacent soft parts.

M. Kiener[2] has shown that numerous microbes are found in the tissues contained in bones affected with this disease, and mentions the staphylococcus aureus and albus. Rodet[3] is quoted by Ollier at the first congress of French surgeons as having produced all the varieties of juxta-epiphysial osteitis by inoculations with fluid cultures of the staphylococcus aureus. In Case XVIII. reported in this paper, both the staphylococcus aureus and albus were found, and another form unnamed.

[1] Diseases of Joints, American edition, 1886.
[2] Quoted by MacNamara: Diseases of Bone.
[3] Rodet: Rev. de Chir., 1885.

Destruction of the epiphysis soon begins, and the necrotic process may go on to the entire destruction of the articular end of the bone. The necrosis may result in the formation of a sequestrum, but usually as the disease advances the pus carries away the broken-down bony and cartilaginous tissues, and at an early period we get grating in the joints, due to the destruction of the cartilage on the bone ends, thus allowing the rubbing together of the two rough surfaces. With the destruction of the epiphysis or its separation from the diaphysis the normal movements of the joint affected are altered, and we may get either a pathological dislocation or a flail-like joint, rarely we get anchylosis. The dislocation of the bone from its articulation may also be due to the destruction of the joint capsule by the products of inflammation, or by destruction of the soft parts adjacent to the articulation. After the products of inflammation have reached the surface and been discharged either by spontaneous rupture or by an incision, the tendency is for the disease to subside with considerable rapidity, and usually the discharge soon ceases and a reparative process is begun. In those cases where the abscess is sub-articular and opens into the joint by a small opening, if the products of inflammation are evacuated early, there may be very slight change in the synovial membrane, the cartilages, and ligaments; but if the products of inflammation remain long in the joint the various structures entering into it may undergo serious changes, and even be completely destroyed.

The probable reason that the epiphysis is most frequently the starting-point of the disease is that the age of the patient is a predisposing cause, for when the bone is being produced and growth taking place, the centres of ossification of the epiphyses are the most vascular portions, and any congestion is more liable to occur here than at any other point.

Prof. Alex. S. Bobroff, of Moscow,[1] in reporting ten cases of osteomyelitis in adolescence, says it most frequently attacks the epiphyses of long bones, and thinks it due to the fact that the medullary cavity and spongy tissue of the epiphyses derive their blood from the nutrient arteries, which on their entering into the canal break into an extensive network with relatively retarded circulation. The retardation reaches its maximum about the epiphysial cartilage, thus favoring the lodgement of pathogenic microbes, and the staphylococci are carried by the veins, either entering by the skin or respiratory organs. The several forms of staphylococci found in acute arthritis of infants also cause multiple abscesses not connected with the bone, and Bouillaud,[2] writing on the subject, quotes Escherich as saying that in all children at the breast, whether they be well or ill, the staphylococcus albus and aureus are

[1] Rhinirgitchesky Vestnik, April and May, 1889.

[2] Annales de Gynécologie et d'Obstétrique, 1888, p. 81.

constantly to be found in the liver and in the more superficial layers of the epidermis. These pyogenic germs may enter the sebaceous or sudoriparous glands and set up inflammation, although usually they enter through a breach of the surface, which is so common in the tender integument of an infant. Of course, these same germs if carried further and lodged in the bone would cause a destructive process to be set up there.

As yet no separate and distinct form of coccus has been discovered in acute arthritis of infants different from what we find in osteomyelitis occurring at a later age, and we cannot but conclude that the disease is a pyæmia of bone.

In this connection I may be allowed to quote from Park's article on acute infectious processes of bone.[1] He says:

"The view that acute osteomyelitis sustains a close relation to pyæmia is hardly expressing it strongly enough. It not only leads to pyæmia, but it is almost from the beginning a pyæmia. This is to be explained, of course, on the anatomical ground that osteomyelitis is essentially a septic phlebitis of bone-marrow, and when we remember the most important *rôle* played by the veins in the production of the pyæmic condition, we can see how almost immediately an osteomyelitis, regarded in this light, becomes first a local, then a general pyæmic condition. Osteomyelitis . . . is one manifestation of the pathogenic properties of several microörganisms possessing common specific pyogenic activities. It is a phlegmon of bone or a local pyæmia," and his conclusions may well be quoted.

"1) There is no specific microbe for the production of acute infectious processes in bone.

"(2) Most, if not all, the staphylococci can cause them; exceptionally the streptococci may exert such an influence.

"(4) Of all the forms, the staphylococcus aureus is most pernicious.

"(8) Of the general causes which favor their entrance, the diathetic conditions, such as the tubercular, and the dyscrasial, like the syphilitic and post-febrile, play a most conspicuous part. Age—that is, childhood—is always a predisposing cause."

An interesting fact has been brought out by some observers, especially by Lannelongue, that in later life an acute process may be produced from an old "infection" which may have been latent for many years, and where such a process occurs the previous history may be of importance.

We may appropriately here consider the results produced by the disease in those cases which recover. In slight cases where but little injury has been done to the bone or soft parts, the joint may be as good as before. In the upper end of the femur, when the epiphysis has become separated from the remainder of the bone, and in many cases the ligaments affected, the thigh-bone may be displaced on to the dorsum ilii, and the condition resemble "congenital dislocation of the hip." The motions are free, and the limb is shortened from two causes: first, from the loss of the epiphysis; second, from the bone being displaced, as in a disloca-

[1] American Journal of the Medical Sciences, July, 1889.

tion. The patient often walks well, but the shortening of the limb will produce some lateral curvature of the spine, due to the tilting of the pelvis. In some cases where the bone has become displaced, instead of the signs of a pathological dislocation, we may have the limb anchlyosed and in a faulty position. This is unusual, however. At the knee, if it is the lower epiphysis of the femur which has been destroyed, the movements of the joint will be free, in fact, freer than normal, there will be shortening of the limb, and the same secondary changes in the spinal column. The loss of the upper epiphysis of the tibia produces the same effect on the joint and a marked loss of length of limb, and in Case X. reported by me, where the fibula was uninjured, whilst the tibia has ceased to grow from its upper end, the fibula has continued to increase in length, and owing to its being attached above to the tibia and below at the ankle-joint, has become markedly bent, the convexity of the curve being on the outer side of the limb. (For further particulars see report of case.)

At the shoulder, elbow, and other joints, similar results may occur. In some cases the sequestrum may remain behind and cause trouble, necessitating its removal. The necrosis of the bone, when it extends to the shaft, may destroy much bony tissue, and if at the same time the periosteum is affected, the resulting deformity may be extensive. Howard Marsh[1] speaks of a case where the stump-like ends of the femur and tibia could be freely moved on each other, and were found to give way whenever the child, who was then twenty-four months old, bore any weight upon the limb. In another instance, the upper end of the tibia had slipped backward into the popliteal space, and was overhung by the projecting lower end of the femur, and in this position the two bones were cicatrized together. Mr. George Brown reports a very interesting case, showing how extensive the necrosis may be[2]—where in a child eight months old, following acute arthritis of the knee, there was necrosis of the entire shaft of the tibia. Amputation was done and the child made a good recovery.

ETIOLOGY.—The causes of acute arthritis in infants are not always easy to ascertain. In a number of cases the most careful investigation fails to discover any. Traumatisms of varying degrees of severity are more frequently assigned as a cause than anything else, and when we consider how slight an injury in an infant may produce a severe contusion, not only of the soft parts but of the deeper structures, we are not surprised at this. Rough and careless handling of a newborn babe may easily produce sufficient injury to the epiphysial end of the bone to cause

[1] Howard Marsh: Diseases of the Joints, American edition, 1886.

[2] George Brown: Acute Arthritis of Knee-joint and Necrosis, etc. Trans. Clin. Soc. London, vol. ix. p. 175.

the disease. Again, we may get a distinct history of injury, such as a fall from the crib or from the mother's arm, or that in turning the child over in bed, or even that at its birth, more force was used than the delicate structures could stand and thus a severe strain or wrench of the soft parts or even of the joints and bones occurred.

Pyæmia, or the absorption of pus from some other portion of the body, in many instances acts as an exciting cause. In some cases the exact point is easily demonstrated. A suppurating umbilicus may be the starting-point and the hip or knee-joint affection be secondary to it. In one of the cases reported in this paper the above state of affairs existed. Dr. Huber, of New York, tells me that he has had in his practice two cases of arthritis of the hip following an ulceration of the umbilicus. The autopsy book of the State Emigrant Hospital, Ward's Island, N. Y., for 1887, also contains the notes of a similar case where both sterno-clavicular joints contained pus, and the bones entering into the articulation were eroded. The pyæmic joint trouble may be caused by an open-wound in some portion of the body and infection through the proper channels, the veins probably being the principal carriers of the microbes. Then there are cases where we cannot say positively whence came the infection. Roswell Park[1] says

> "that the infection may occur through the ears, eyes, nose, mouth, pharynx, respiratory passages, mucosa of the alimentary canal, or skin; or, in other words, through any lesion of external or internal body surfaces. Furthermore, from any subcutaneous phlegmon, however small."

So that in a case presenting the characteristic symptoms of the disease, and with the characteristic lesions, we might have to look over all the above before we could positively say how the infection came to be introduced into the system. The wound, excoriation, or superficial or deep lesion may readily be so minute as to escape our observation.

The various exanthemata may act as exciting causes. T. Holmes[2] mentions an interesting case of suppuration in the hip-joint of an infant seven months old, following chicken-pox. Dr. K. McLeod[3] details a case of epiphysitis due to variola, and another interesting case is reported by Ancell[4] in a babe eleven months old, suffering with variola. An eruption appeared, and discoloration commenced on the tenth day; upon the eleventh the infant showed signs of distress, various swellings occurred in the neighborhood of the joints, and fluctuation soon followed with dilatation of superficial veins. After death, diastasis of most of the epiphyses was noted, while various joints were filled with pus.

Typhoid fever in older children is in many instances an exciting cause

[1] American Journal of the Medical Sciences, July, 1889.
[2] T. Holmes: The Surgical Treatment of Diseases of Infancy and Childhood.
[3] Indian Medical Gazette, 1883, p. 232.
[4] Archives of Medicine, 1830, vol. iv. p. 491.

of periostitis, but I have found no cases recorded where a suppurative arthritis followed. Measles was ascribed as the exciting cause in one of Mr. Wright's cases. Scarlatina also may be complicated or followed by a joint trouble of a purulent character, and most writers on diseases of children speak of it. Eustace Smith[1] says the trouble may be pyæmic, rheumatic, or the expression of the scarlet fever in the joint.

Dr. H. Ashby,[2] of Manchester, has written an interesting article on the surgical complications of scarlatina, and describes four varieties: synovitis; acute or chronic pyæmia; acute or subacute rheumatism; scrofulous disease of joints. He only reports three cases where the fluid in the joint was purulent in character, and does not give the ages of the patients except in one case, a boy of two and one-half years. Acute arthritis of infants has also been known to follow whooping-cough.[3]

Empyema is given as the exciting cause in a case reported by Mr. John Abercrombie,[4] and in a case related to me by Dr. Huber, of New York. The empyema was complicated by a purulent effusion into the metatarso-phalangeal articulation of the big toe of the right foot.

Tubercular disease or scrofula must, of course, when it exists in the parents, have a tendency to weaken the child's constitution, and render it more susceptible to any form of disease. Especially must it place the infant at a disadvantage when attacked by an acute disease which quickly lowers its vitality. Syphilis, as we know, produces disease and changes in the bone, but not of the character we are discussing; yet there is no reason why pyæmia should not attack a patient suffering from inherited syphilis. In most of the cases I have seen reported nothing is said as to the question of tuberculosis being inherited, or as to the question whether the parents were tubercular or not. In the cases I have personally seen, this point was carefully examined into, and in only a small proportion of cases was there any tuberculous history. The age of the child is a matter of great importance, and nearly all cases have occurred in children under one year.

Symptoms.—The symptoms of acute arthritis in infants are quite constant, only we have different forms of severity of the disease. In most cases the disease is ushered in by a chill, although in a very young infant this may be absent or difficult to detect. A rise of temperature follows the initial chill, and in the very severe cases this may be well marked and at an early date be extreme. There is usually a difference between the evening and morning temperatures, the latter being the lower. The joint affected very soon becomes flexed, and in all the cases I have seen in the acute stage this was one of the most constant symp-

[1] Diseases of Children. Phila., 1886.
[2] British Medical Journal, May 22, 1886.
[3] Diseases of Children. Ashby and Wright, 1st edition.
[4] Transactions Pathological Society, London, 1881, xxii. 192.

toms. Any effort at straightening the limb is resisted by muscular spasm and usually causes considerable pain. The child may be very restless and fretful, and this may be due directly to the pain produced by the disease in the bone and articulation. A purulent effusion soon takes place in one or more joints, there is increased heat, limited motion at the articulation, and as the pus increases the superficial tissues may become red and œdematous or may be brown and glazed in appearance. The superficial veins become enlarged, the abscess with more or less rapidity invades the surrounding tissues, and in arthritis at the knee may extend to the hip or a considerable distance down the limb, toward the ankle.

Whilst the local symptoms are increasing the constitutional symptoms become more marked, the temperature rises until in the evening it may be 104° or over; the child becomes wasted, pale, sallow, has an anxious expression, may be delirious or have convulsions, or may have several chills followed by fever; and unless the patient's constitution be very strong or the surgeon interferes, the case rapidly goes on to a fatal termination. Very acute cases have been known to run their entire course in thirty-six hours. In these acute and severe cases exhaustion or pyæmic deposits in some of the viscera are the usual causes of death. In other cases the initial symptoms are the same, but the disease does not run nearly so rapid a course, and the abscess or purulent collection in the joint is formed more slowly. The constitutional symptoms are not so severe, and the effusion in the joint or the abscesses in the surrounding tissues, though they be large, gradually come to the surface and discharge or are opened by the surgeon, and the little patient makes a rather rapid recovery considering the nature and severity of the disease.

Another cause of death is given in a very interesting case reported by Wilmott,[1] entitled "Notes of a case of obscure abscess of the hip-joint in an infant, with death from pressure on the right common iliac vein." The child was six months of age, and had been ill five weeks when seen by Dr. Wilmott—supposed cause, a fall from perambulator, at which time the leg was twisted more or less severely. The most marked symptom was a slight swelling in the right groin and right labium. There was flattening and increased width of the right gluteal region. The child died on the twelfth day. The post-mortem showed that the abscess had burrowed up the course of the psoas muscle and down it on to the right thigh. The head of the femur and the upper rim of the acetabulum were denuded of bone, the capsule of the joint was ruptured on the inner side, the right common iliac artery and vein were involved in the inner side of the abscess wall, and in the vein was an embolus. Mr. Wilmott believes,

[1] Wilmott: Australian Medical Journal, Melbourne, 1882, N. S. iv. 344, 347.

had the case not died from embolism, the abscess would have ruptured and pus gotten into the peritoneal cavity and thus caused death.

DIAGNOSIS.—The diagnosis of acute arthritis of infants, though in most cases not difficult, yet at times is perplexing. It may be confounded with acute rheumatism, sprains and contusions of the joints, syphilitic disease of the bone, abscesses in the neighborhood of an articulation, or what is sometimes called "acute periarthritis," and with malignant growths, and, in some rare instances, with a tubercular osteitis, in which abscesses appear early, and the symptoms at the onset are usually acute, or in later years the previous disease may be overlooked, and the case mistaken for a congenital dislocation.

From acute rheumatism the diagnosis can be made by examining the character of the joint effusion. In rheumatism it is thin or flaky, but not purulent, and the swelling is confined to the joint and does not invade the surrounding tissues. The rheumatic diathesis must also be inquired into, and the general condition of the patient taken into account. In the purulent effusions the constitutional symptoms are more severe, and the emaciation, loss of flesh, etc., more marked.

In sprains and contusions, although several joints may be involved, there are usually slight if any constitutional symptoms, but little pyrexia, and no loss of flesh or signs of blood-poisoning. It is the tissues about the joint, or, rather, superficial ones, which are involved, and a careful examination will disclose this fact. Then, the course of the two affections is very different. The following case well illustrates these differences:

Louis Shimmel, aged three and one-half months, seen at out-door department of Hospital for Ruptured and Crippled, July 6th. Fell three days ago from a chair; right ankle and left wrist are hot and swollen; no pus found by examination with hypodermatic needle; movements of joints slightly restricted; temperature normal. Child in good physical condition. Ordered hot fomentations. Aug. 15th: Examination shows no trace of former trouble. Mother says that in three days after the child was brought to the dispensary he was perfectly well again.

Syphilitic disease of the bones in infants is the trouble for which we are most apt to mistake arthritis of infants, and in all cases the history of syphilis must be carefully inquired into.

Taylor,[1] speaking of the variety with which we are interested, says: "The most extensive form of degeneration of these osseous swellings, in which there is a separation of the epiphysis from the diaphysis, appears also to be the rarest in practice." Since then quite a number of cases have been reported, and this form of epiphysial separation is well recognized. It is usually met with in children under one year of age. Node-

[1] Taylor, R. W.: Syphilitic Lesions of the Osseous System in Infants and Young Children. New York, 1875.

like swellings occur near the articular end of the bone or bones involved. These swellings increase with more or less rapidity, suppuration in and about the joint follows, the epiphysis is destroyed, and, as a result, deformities ensue.

The history of syphilis, the fact that swelling begins at a slight distance from the articulation and extends to it secondarily, that at first no fluctuation is present, that usually several joints are affected, that some of the specific forms of skin disease are often present, and that progress of the disease is usually not so rapid, and is relieved by the proper anti-syphilitic treatment, are all points of importance in arriving at a diagnosis.

From an "acute periarthritis," or an abscess adjacent to the articulation, the diagnosis is easily made. We have generally a history of traumatism and a more or less rapid formation of pus in the periarticular tissues, without the joint being involved. If abscesses be large, there may be severe constitutional symptoms, but other joints are not affected, and the symptoms are generally purely local. The following case is a typical one:

H. O., aged two years. Came to the Hospital for Ruptured and Crippled, out-door department, June 13th. Four weeks ago fell out of a cradle, twisting her leg. For the past three weeks a swelling has been gradually forming just above the internal condyle of the left leg. Child strong and healthy; no specific history; abscess about the size of a walnut; joint motions good. Opened by free incision, and large amount of pus discharged; poultices ordered. Aug. 15th: Is perfectly well; joint motions good.

In cases where the formation of the abscess has not been very rapid, and is of great size, tissues glazed in appearance, superficial veins much dilated, cachexia extreme, acute arthritis of infants may easily be mistaken for malignant disease. Such errors have been reported by many competent observers. The use of the hypodermatic needle, the involvement of the neighboring lymphatics, the rate of growth, a careful examination of the tumor and surrounding tissues, and the motion in the adjacent articulation, if carefully looked for, will in all cases render a diagnosis clear, though it may at first seem difficult.

Tubercular osteitis of the hip, or hip-joint disease, is very rare under one year of age. Gibney[1] says that 61 out of 560 cases analyzed began before the second year, and that the disease is known to begin as early as the eighth month, but he is rather sceptical as to these very early cases being "chronic osteitis." In the early cases of hip-joint disease the reflex spasm is an important symptom. The osteitic cry and the less marked constitutional symptoms, also, are aids in diagnosis, and I think

[1] Gibney: Diseases of the Hip.

it doubtful if, with ordinary care, hip-joint disease can be mistaken for acute arthritis of infants.

TREATMENT.—Mr. Holmes[1] remarked in 1869 that "acute joint disease leads directly, and in childhood almost inevitably, to abscess, and it is in my opinion very important that this should be opened at the earliest possible moment." To-day no better advice could be given. Once the diagnosis is made, the purulent collection, whether in the joint or the surrounding tissues, should be evacuated. Delays are dangerous. Free incisions, thorough drainage, and antiseptic precautions alone offer us any chance of successfully combating the disease. The incisions should be sufficiently large to permit thorough drainage. If the abscess has invaded the soft parts about the articulation, the incision should extend down to the bone, and by that, I mean through the periosteum; for underneath it the pus may still be confined. After the joint has been opened and drainage secured, it should be thoroughly washed out with some antiseptic solution, and, if necessary, drainage-tubes or tents of iodoformized gauze or horsehair should be used to prevent the pus remaining in the joint, should more be formed. If the necrosis persist, it may be necessary, either with a gouge or Volkmann spoon, to scrape out thoroughly the sinus leading to the dead bone, and then remove such diseased bone as may be present. If the sequestrum be so situated as not to be readily removed, a more extensive operation will be necessary.

If any fear of anchylosis occur, or the surrounding parts in cicatrizing tend to produce deformity, the use of a proper splint will be necessary to keep the limb in the best possible position. If the loss of bone be very great and the joint rendered useless thereby, the question of excision or amputation will be presented to the surgeon, or it may be necessary to decide upon some form of mechanical appliance suited to the case.

If the deformity produced be confined to the soft parts, section of tendons or of cicatrices may also be necessary. In addition to operative interference, the constitutional treatment should not be neglected. The patient's strength should be supported by stimulants, such as brandy or whiskey, carbonate of ammonium, morphine, and other suitable remedies, and during convalescence tonics should be prescribed. But the most important point is the early evacuation of the pus, whether in the joint, bone, or soft parts.

With the exception of the cases kindly furnished me by Drs. Brown, Huber, Marple, and Walser, all of the cases reported in this paper were seen at the Out-door Department of the Hospital for Ruptured and Crippled, New York, during the past year.

[1] The Surgical Treatment of the Diseases of Infancy and Childhood, by T. A. Holmes. London, 1869.

In all the following cases I have personally seen, a careful inquiry into the family history, and a careful examination of the patients, failed to reveal any evidences of syphilis. The measurements are all in inches. The letters R. A. mean the distance from right anterior superior spine of ilium to lower end of internal malleolus of right leg, L. A. the same on left leg; R. U. the distance from umbilicus to right internal malleolus, L. A. the same on left side; R. T. the circumference of right thigh; L. T. the circumference of left thigh; R. K. the circumference of right knee; L. K. the circumference of left knee; R. C. the circumference of right calf; L. C the circumference of left calf; A. G. E. angle of greatest extension; A. G. F. angle of greatest flexion.

CASE I.—Charles Burley, ten months. Right hip. April 17th. Family history negative.

Personal History.—Two months ago mother noticed a "lump" in lower part of the back, which gradually extended to hip and then to the groin. Has had no treatment. Mother has had nine children—four living, five dead. Causes, cholera infantum and teething. Hygienic surroundings where family live are good.

Examination.—Child very much emaciated; has large abscess over outer side right hip, communicating with an abscess about the size of a small hen's egg in groin, which presses the genitals over toward left side; veins over abscess are enlarged. At lower end near scrotum, abscess wall is very thin, and pus can be seen through the glazed skin.

Movements of hip, right side, are unusually free. Child very quiet during examination, and though right thigh is held flexed at about 120° movements do not seem to cause pain. No joint grating. Owing to the fact that child had to be taken home, a distance of some five miles, necessitating several transfers on horse cars and trip across a ferry, and that skin was so thin, it was thought best to allow abscess to open itself. Poultices were therefore ordered.

After the application of the second poultice the abscess opened and discharged freely, and the child seemed weaker. Ordered a very small amount of brandy in addition to the mother's milk, as the child was still nursing.

April 20. Child very weak; very little difference in size between the two sides, right hip joint very movable, no grating in joint. Discharge from abscess consists of a thin, dark red fluid, and some thick pus. Both legs lie parallel on table. Opening through which discharge occurs is in right groin, oval in shape and about the size of a small pea.

Post-mortem.—(April 26th, twenty-six hours after death.) Child very much emaciated. Rigor mortis not well marked. Permission could only be obtained to examine hip under condition that nothing be removed.

Movements of right hip were freer than those of left. Having adducted the limb and rotated in, pushing it upward, it was found that it could be dislocated and the same easily reduced. Parts about hip were somewhat thickened; opening of abscess was about one-fourth by one-eighth of an inch, oval in shape, situated on inner side of right thigh on a level with Poupart's ligament and about its centre. Passing probe in, it was found to pass upward and backward over the ligament and into the pelvis; withdrawing it, another sinus was found leading outward and

downward toward the hip-joint. No bare bone could be felt. By bending probe, it could be passed around the hip into gluteal muscles. An incision was made on outer side of thigh about four inches long, and careful dissection made down to bone. After cutting through skin, superficial fascia, and the fat, the muscular tissues were found filled with dark greenish thick pus. The capsular ligament was softened, yellowish-green in color, with one or two dark spots on front aspect of joint, evidently hemorrhages. Its attachment to rim of acetabulum was incomplete posteriorly, and portion where head of bone had come out was easily found. It was firmly attached to the trochanter major and to the front of the bone and inner side.

Cutting away the capsular ligament in front, then on inner side and outer side bone slipped out of acetabulum. The joint was full of very dark greenish pus. Ligamentum teres was completely destroyed, no trace of its attachment to femur could be discovered, and its acetabular attachment was only found after thoroughly wiping off the parts, when a small band was seen, much softened, yellowish in color, about one-eighth of an inch in length. The acetabulum was dull grayish in color, but smooth. Cartilage not destroyed.

On femur the cartilage of head was entirely destroyed except a small spot on upper surface, not over one-fourth inch in circumference. The rest of the head was dark brownish-red in color, rough, and especially so at lower portion. The bone below the trochanter minor was normal. Portion of head which was denuded of cartilage was softer than was the shaft of the bone. Abscess posteriorly occupied considerable portion of glutei muscles, and pus had escaped from joint posteriorly and worked round the bone and over thigh to a point where it opened.

Case II.—Mary Muhlstein, two and one-quarter years. Right hip. May 16th. Family history negative.

Personal History.—When ten months old a small lump was noticed on outer side of right thigh, which rapidly increased in size until right thigh was twice as large as left. It was then opened (two months from beginning of trouble) and much matter discharged. It continued to discharge for a few days, then closed and has so remained. Has cicatrix over outer side of hip-joint. Child began to walk when eighteen months old, and has always walked lame.

R. A. 12½. R. U. 16. R. T. 10½. R. K. 8. R. C. 6½.
L. A. 13½. L. U. 16½. L. T. 10¾. L. K. 8. L. C. 6½.

Right thigh can be pulled down so as to measure nearly thirteen. The trochanter is one and one half inches above Nélaton's line. No pain, motions good, child walks with a hip limp rather than the gait usually seen in congenital dislocation.

June 27. Condition unchanged as limbs lie parallel, and there is no apparent trouble in joint. Nothing is done but to keep up general nutrition.

Case III.—Amelia Brunner, two years and ten months. Left hip. May 20th. Family history: father is phthisical.

Personal History.—When five months old it was noticed that child's toes were bent on left foot, and a few days afterward a swelling appeared over left hip. This increased in size gradually, until it was as large as an orange, and child pulled her leg up and has retained it in same position ever since. The swelling then began to extend downward toward knee, and knee became swollen. Swelling finally disappeared. Child

is in poor condition. Thigh flexed on pelvis at about 120°, and leg on thigh. Neither can be straightened. Trochanter one inch above Nélaton's line.

May 30. Under ether, leg and thigh were forcibly straightened, and plaster-of-Paris spica applied.

31*st*. New plaster-of-Paris applied, as one put on yesterday had cracked. Thigh extended to about 150°.

June 12. Hip-splint applied.

26*th*. New hip-splint applied; child beginning to walk, and thigh can be extended to about 165°.

July 10. Is wearing hip-splint, and walks about considerably. Ordered syr. ferri. iod., as she is pale.

August 1. Child looking well; appetite improved; wearing splint with comfort. Legs parallel.

Sept. 18. Some movement in hip and knee.

CASE IV.—Grace Callan, fourteen months. Right hip. June 18th.

Family History.—Father's brother died of phthisis. Mother had a cough. None of family ever died of phthisis.

Personal History.—Grace is the second child; labor normal. Is supposed to have fallen one month ago; no certainty on this point. Marked infiltration about right hip, skin bluish, and veins enlarged. All movements resisted.

A. G. F. 120. R. A. 11½. R. U. 14. R. T. 9. R. K. 7. R. C. 5.
A. G. E. 160. L. A. 12½. L. U. 14½. L. T. 7. L. K. 7. L. C. 5.

Hypodermatic needle passed in until it touched bone, and some pus withdrawn. With aspirator one ounce of pus withdrawn; as no more could be evacuated, with antiseptic precautions an opening was made on outer side of thigh, and three ounces of pus discharged. Abscess extended up and down shaft of femur. At point of opening bone was covered by periosteum. Strips of iodoform gauze left in for drainage, and bichloride gauze and bandages applied over this.

June 21. Wound dressed to-day, and about one-half ounce of pus in dressings. Parts thoroughly washed out. Probe does not touch bone. Dressed as before. Legs parallel; flexion resisted at about 110°. General condition of child much improved.

July 9. Wound entirely healed; joint motions good.

CASE V.—Stanley Le Mair, aged fifty-eight days. Right knee. May 20th.

Family History.—Mother's brother died of phthisis. Father's brother died of phthisis. Father has a cough.

Personal History.—When sixteen days old, child's left knee began to swell, swelling then extending down the leg and up the thigh. Child was feverish and fretful. Three weeks ago the abscess broke on the inner side of the knee-joint, and just below it; discharged freely, and is still doing so. Second day after discharge appeared, a small piece of bone came away.

R. K. 6½, 6, 5½. } Leg is held flexed, and can only be extended to
L. K. 7, 6½, 6½. } about 150°.

Just before the abscess on the knee opened an abscess appeared over sternum, which broke in a few days, and cicatrix shows clearly now over sterno-clavicular articulation, right side. Poultices applied to knee.

May 29. Small abscess on anterior surface of leg below knee-joint

opened. Probe passed through sinus; goes downward and backward to bare bone. Poultices reapplied.

June 2. One small sinus dicharging. Dressed with iodoform gauze.

14*th*. Small piece of bone removed last night from lower sinus. Child doing well.

July 9. Very slight discharge; joint freely movable. Child's general health improved.

17*th*. Some restrictions to joint movement. Straight plaster-of-Paris splint applied.

CASE VI.—John Arnot, three months. Left hip. June 19th.

Personal History.—When five weeks old a lump appeared on outer side of left thigh, over trochanter, which was opened and pus evacuated. Patient also comes to hospital for a double hydrocele. Motions of left hip are all restricted, but possibly from soreness left after the incision.

June 26. Child doing fairly well. Has abscess over posterior surface of left hip-joint. As mother objected to its being opened, poultices applied.

29*th*. Abscess opened to-day; needle passed into hip-joint; one ounce of pus evacuated. Prepuce dilated, as phimosis existed.

July 3. Opening healed; motion of joint good; much improved.

CASE VII.—Frank Rex, eight months. Right hip. June 11th.

Family History.—Mother's father and sister died of phthisis. Father's family healthy.

Personal History.—Child weak and in poor condition. About four weeks ago an abscess formed in right groin, and opened in a few days. This soon closed, and child kept thigh flexed to about 120°. At present all motions of joint are restricted; there is infiltration over upper part of thigh, and inguinal glands are enlarged. Thigh can be forcibly extended to about 150°; leg slightly flexed on thigh.

R. T. 7. R. K. 7. R. C. 5½. } Right trochanter is about one-half inch
L. T. 6. L. K. 6. L. C. 5½. } above Nélaton's line.

On inner side of thigh is a cicatrix where abscess first opened. One week ago an abscess formed at umbilicus, about the size of a cherry, and has been discharging ever since quite freely, and seems to connect with the old abscess of groin. Child cries at night; nurses well, but sleeps poorly. Ordered hot fomentations, and to return in two days. Never returned. Efforts were made to trace this case, but we were never able to find it. I think the child probably died.

CASE VIII.—Euphemia Campbell. Left hip. June 10th.

Family History.—Maternal good. Paternal good. The tenth child; seven living; two died of diphtheria; other, cause unknown.

Personal History.—When one month old had an abscess over left hip; thigh swollen to twice its natural size. Abscess opened by a doctor in East Fifty-third Street. It continued to discharge for four weeks, then healed. Cicatrix about one-half inch long on outer side of thigh. Trochanter three-fourths inch above Nélaton's line.

R. A. 12½. R. U. 14. R. T. 11. R. K. 8.
L. A. 12. L. U. 13½. L. T. 10. L. K. 8.

The left leg can be pulled down one-half inch.

CASE IX.—Morris Folby, ten months. Right knee. July 6th.

Family History.—Paternal good; maternal good.

Personal History.—Mother first noticed signs of pain in knee one week ago. Knee became slightly flexed and swollen; cold was applied, but

swelling still increased. Now measures one inch more than opposite knee. Fluctuation positively made out. Hypodermatic needle inserted just under patella, and also above and to inner side of joint, and to the bone, but no pus found. Ordered poultices, and to report in forty-eight hours.

Case then passed into hands of Dr. Silver, of New York, who informs me that he opened the joint, found thin pus and flakes of lymph, washed it out thoroughly, inserted drainage-tubes, and encased the limb in plaster-of-Paris, and that the child made an excellent recovery, and has a good movable joint.

CASE X.—Walter McCorm, six years. Seen at Nursery and Child's Hospital, S. I., through the kindness of Dr. W. C. Walser.

Personal History.—At three months of age the child had an abscess of right knee, which was lanced at Nursery and Child's Hospital, N. Y. The discharge kept up for a long time, and mother was advised to have the leg amputated, but would not consent. When five months of age was taken to Roosevelt Hospital, and treated, the discharge gradually becoming less, till at eighteen months of age the openings were healed. Has been treated by straight splint, plaster of-Paris, and also by a brace.

Sept. 8. Boy examined to-day. Is in fine physical condition. Right knee has some lateral motion, but very slight; other movements unusually free. Some grating when joint is moved.

R. A. 19. R. U. 22½. R. T. 11½. R. K. 9. R. C. 8½.
L. A. 20. L. U. 23. L. T. 11½. L. K. 8¾. L. C. 8.

From interior condyle of right leg to interior malleolus, 7¼.

From exterior condyle of right leg to exterior malleolus, 8½.

There being a marked bowing of the fibula outward, due to the fact that it has continued to grow, and tibia has not, at its upper end, as its epiphysis has been destroyed, and as fibula is attached above and below, it has been forced to bend outward. Boy walks slightly lame, with a high shoe on shortened limb.

CASE XI.—Bertha Lavers, aged ten years. Right hip. August 13th.

Family History.—Paternal good; maternal good. Five of family living and in good health. Hygienic surroundings, tenement house.

Personal History.—Health during infancy, good. Dates of vaccinia, 1880, rubeola, 1884, diphtheria, 1885. Present disease: date of inception, when eight days old.

The right thigh became swollen and red without any known cause. Swelling was about the size of an orange and extended up on to nates. At the end of two weeks it was lanced, and a cupful of fluid evacuated. For three months afterward thigh was held flexed on abdomen, and finally leg was straightened by weight and has remained so.

R. A. 21. R. U. 24. R. T. 11. R. K. 8½. R. C. 8.
L. A. 23. L. U. 25½. L. T. 13½. L. K. 8. L. C. 9.

Head of bone two and one-half inches above Nélaton's line on right side. Flexion good, abduction about half normal, adduction good.

CASE XII.—Female, one month, nine days.

Personal History.—Abscesses in both sterno-clavicular articulations, bones eroded, umbilical vein before entering liver impervious, and after reaching it dilated and distended with pus.

Before death the cause of purulent effusion into the joints was considered to proceed from trouble in umbilical vein. The *autopsy* was made

by Dr. Thacher, and permission to quote the case kindly given by Dr. Marple, Physician-in-Chief to State Emigrant Hospital, Ward's Island.

Cases XIII., XIV.—Two cases of arthritis of hip due to suppuration at umbilicus. Related to me by Dr. Huber, of New York. Both of these cases terminated fatally.

Case XV.—Case of metatarso-phalangeal articulation, big toe, complicating empyema. Related to me by Dr. Huber.

The two following cases were kindly furnished me by Dr. Dillon Brown, of New York.

Case XVI.—Male, nine months. Left hip. Seen May 16, 1886. Family history negative. No cause known for the disease. Supposed to have come from a cold.

Personal History.—Mother's attention was first attracted to the child's trouble by his complaining of pain in the left hip, which was not benefited by change of position and gradually grew worse. Parts became tender, a swelling appeared which was very tense, though fluctuation was easily detected. The superficial veins over it were enlarged and the outline of the tumor lobulated like a sarcoma, most prominent portion being over anterior surface of thigh. Motions of the joint were painful and restricted. Circumference of left thigh three and one-half inches from anterior superior spine, eight inches. Circumference of right thigh three and one-half inches from anterior superior spine, seven inches.

June 3. Aspirated, and thin watery pus evacuated.

5*th*. Abscess opened and contents completely evacuated. Motions at joint improved. Child in very poor condition; emaciation extreme; was having night-sweats and diarrhœa, but eventually made a good recovery.

Case XVII.—*Autopsy* on case of acute arthritis of infants, New York Foundling Asylum. Male, eighteen months. Child much emaciated, though had succumbed rapidly to the disease. Motions in left hip-joint good, upper epiphysis of femur was detached from the shaft of the bone, and tissues in and around the joint were infiltrated with pus.

Case XVIII.—Robert Casey, four months. October 4th. Hygienic surroundings, tenement house. Family history, good.

Personal History.—Is a seven-months' child, one of twins. Was perfectly well until one week ago, when mother noticed child was cross. No cause known for it. Day before yesterday ring-finger of left hand began to swell, and next day the right wrist; child was feverish; appetite good; cries continually and is losing flesh.

Examination.—Ring-finger of left hand is swollen, red; fluctuation detected; is held flexed; swelling is greatest at junction of first and second phalanges, no swelling of hand. Right wrist swollen, on ulnar side swelling is greatest, extra heat, some tenderness apparently. Child looks poorly. Temperature 101°, pulse 120.

Treatment.—Finger opened by incision on dorsum, which was made to extend into the joint, and about fifteen to twenty drops of yellowish pus evacuated. No bare bone felt. Wrist-joint opened on ulnar side, bare bone felt at lower end of radius and no pus evacuated until point of bistoury was pushed into the lower end of radius. Antiseptic precautions were used; joints thoroughly washed out with bichloride solution, and dressings applied.

October 7. Both wounds looking well. Discharge very slight. Temperature 99½°.

15*th*. Wrist healed, finger swollen as drainage is imperfect. Several

horsehairs which had been antiseptically prepared were passed through the joint.

27*th*. Horsehair removed; no discharge on dressings, finger very little larger than normal.

In this case a specimen of the pus was sent to the laboratory of the New York Polyclinic for examination, and Dr. Tuttle, who examined it, reported as follows: Specimen examined October 11th, stained by simple method and by Gram's method, showed scattered about through the field and occurring in large groups, staphylococci identical in every respect with the staphylococcus pyogenes aureus and albus, and besides these a much larger coccus occurring singly or in short chains or groups, variety not known.

CASE XIX.—Sarah Neufeldt, two months. September 30th. Hygienic surroundings good. Family history negative.

Personal History.—Present disease began six weeks ago, cause unknown. Right knee and both wrists were swollen, knee flexed, wrists held in normal position. Child was taken to a dispensary in town, and on outer side of knee-joint an incision was made and pus evacuated; cicatrix shows plainly; wrists are both swollen and contain pus, as shown by fluctuation, extra heat, and redness. As we would not take child into hospital, mother refused to have anything done. Child in fair condition. Temperature not taken.

The table on page 21 gives the cases that I have been able to find.

Of these 71 cases . . . . . 32 died, or 45 per cent.

In 52 cases one joint only affected:
Of these 52 cases . . . . . 18 died, or 34 per cent.

In 19 cases more than one joint affected:
Of these 19 cases . . . . . 14 died, or 73 per cent.

Sex specified in 49 cases: 31 males, 18 females.

The joints most frequently affected were:

Hip	37 times.
Knee	26 "
Shoulder	12 "
Wrist	5 "
Elbow	4 "
Ankle	4 "
Finger-joint	2 "
Toe-joint	1 "
Sterno-clavicular joint	1 "

NOTE.—To the above should be added two cases reported by Ashby and Wright,[1] in children 9 months old, one at hip and one at knee, both of which recovered, and which, if taken into account, slightly alter the results.

[1] Diseases of Children. Manchester, 1889.

Joints affected.	Age.	Sex.	Result.	Reported by	Reference.
1. Left knee	4 w'ks	M.	Died,	T. A. Smith,	St. Barth. Hosp. Rep. vol. x.
2. Right knee, left knee, left elbow, left ankle	"	M.	"	" "	" " " "
3. Both hips, right shoulder	9 mos.	M.	"	" "	" " " "
4. Right hip, right wrist	6 w'ks	F.	"	" "	" " " "
5. Left hip	8 mos.	M.	"	" "	" " " "
6. Left hip, right knee	3 w'ks	F.	"	" "	" " " "
7. Right shoulder	10 "	M.	"	" "	" " " "
8. Right hip	7 "	M.	"	" "	" " " "
9. Right hip, right wrist	4 "	F.	"	" "	" " " "
10. Shoulder	6 mos.	M.	"	" "	" " " "
11. Left hip, right shoulder	4 w'ks	...	"	" "	" " " "
12. Left knee and a finger-joint	5 "	M.	"	" "	" " " "
13. Both hips, elbow, and ankle	3 "	F.	"	" "	" " " "
14. Left hip	5 mos.	M.	Recov.	" "	" " " "
15. Left hip	3 "	M.	"	" "	" " " "
16. Left hip	7 "	F.	"	" "	" " " "
17. Knee	5 "	M.	"	" "	" " " "
18. Knee	10 w'ks	M.	"	" "	" " " "
19. Knee	6 mos.	M.	"	" "	" " " "
20. Knee	1 year	M.	"	" "	" " " "
21. Right shoulder, left elbow, and left ankle	9 w'ks	M.	"	" "	" " " "
22. Hip	18 mos.	...	Died,	Judson,	N. Y. Med. Journ., Dec. 1878.
23. Hip	8½ "	F.	Recov.	Gibney,	Diseases of the Hip.
24. Left hip	10 "	M.	"	" " "	
25. Hip	3 w'ks	...	Died,	MacNamara,	Dis. of Bones and Joints, 1881.
26. Left knee	5 mos	M.	"	Barwell,	Dis. of Joints, 1881.
27. Shoulder	3 w'ks	...	"	MacNamara,	Lancet, 1879, ii. 231, 267.
28. Left knee	8 mos.	...	Recov.	G. Brown,	Clin. Soc. Trans., ix. 175.
29. Knee	.....	...	"	Dr. Berlin,	South. Pract., Nashville, 1885, vii. 72, 75.
30. Knee	2 mos.	...	Recov.	J. Abercrombie,	Trans. Path. Soc., London, 1881, xxxii. 192.
31. Right shoulder, right hip	13 "	M.	Died,	Charles Atkin,	Med. Press and Cir., London, 1885. [No 43.
32. Right knee and left elbow	7 w'ks	F.	"	Krause,	Berl. klin. Wochen., 1884,
33 Right knee	6 mos.	...	Recov.	W Morrant Baker	St. Barth. Hosp. Rep., 1880.
34. Left hip	12 "	F.	Died,	Krause,	Berl. klin. Woch., 1883.
35. Metatarsus, 1st and 2d	14 days	F.	"	Huber,	Archiv. f. Path. Anat., Ber., 1882.
36. Knee	9 w'ks	...	Recov.	W. Morrant Baker	St Barth. Hosp. Rep., 1880.
37. Knee	4 mos.	...	Died,	Owen,	Lancet, 1871, i. 246
38. Shoulder	8 "	...	Recov.	Owen,	Surgical Dis. of Children.
39. Right hip	6 "	M.	Died,	Wilmott,	Australian Med. Journ., 1882.
40. Hip	7 "	...	Recov.	Holmes, T. A.,	Surg. Treat. Dis. of Children.
41. Left knee	11 w'ks	F.	Died,	Wright, G. A,	Lancet, 1881, ii. 127.
42. Right hip	13 mos.	F.	Recov.	" "	" " "
43. Right shoulder	19 days	F.	Died,	" "	" " "
44. Hip	.....	...	Recov.	Howard Marsh,	Dis. of the Joints, Am. ed.
45. Hip	.....	...	"	" "	" " " "
46. Hip	.....	...	"	" "	" " " "
47. Knee	.....	...	"	" "	" " " "
48. Knee	.....	...	"	" "	" " " "
49. Knee	.....	...	"	" "	" " " "
50. Both hips, right knee, both shoulders	3 days	M	Died,	Terrisse,	Thèse de Paris.
51. Right hip, both knees, left ankle, and wrist	4 "	M.	"	"	" " "
52. Left knee	6 "	M.	"	"	" " "
53. Right hip	10 "	F.	Recov.	Gibney,	Med. Rec., March 5, 1880.
54. Right hip	10 "	M.	"	Townsend.	
55. Left hip	5 "	F.	"	"	
56. Right hip	14 "	F.	"	"	
57. Left knee and right sterno-clavicle	58 days	M.	"	"	
58. Left hip	5 w'ks	M	"	"	
59. Right hip	7 mos.	M.	"	"	
60. Left hip	1 mo.	F.	"	"	
61. Right knee	10 mos.	M.	"	"	
62. Right knee	3 mos.	M.	"	"	
63. Right hip	8 days	F.	"	"	
64. Sterno clavicle (both)	39 days	F.	Died,	"	
65. Hip	.....	...	"	"	
66. Hip	.....	...	"	"	
67. Metat. phalang. big toe	.....	...	Recov.	"	
68. Left hip	9 mos.	M.	"	"	
69. Left hip	18 "	...	Died,	"	
70. Right wrist and finger-joint	3 "	M.	Recov.	"	
71. Right knee, both wrists	2 "	M.	"	"	

CONCLUSIONS.—From a study of the disease I think the following conclusions may be drawn:

1. Acute arthritis of infants occurs most frequently during the first year of life.

2. It is pyæmic in character, an osteomyelitis of infant life, and is caused by one of the forms of staphylococci, most frequently the staphylococcus albus or aureus; may follow traumatisms or the exanthemata.

3. The most frequent site of infection is the epiphysis near the joint, which in early life is frequently intracapsular.

4. The disease progresses rapidly, and nearly fifty per cent. of the cases have terminated fatally, the most frequent cause of death being exhaustion.

5. A more or less complete destruction of the "joint end" of the bone, pathological dislocations, flail-like joints and loss of length of limb, rarely anchylosis, are the most common results of the disease.

6. Disease is most frequently met with in hip, knee, and shoulder.

7. As soon as the disease is recognized the pus should be evacuated promptly, the joint properly drained and parts dressed antiseptically.

8. The treatment of resulting deformities should be conducted on general orthopædic principles.

EARLY DIAGNOSIS OF CHRONIC KIDNEY LESIONS.[1]

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WHAT means have we at present to determine that a patient has some chronic disease of the kidneys?

What is the relative value of these agents, and how far can they be depended upon in the diagnosis of individual cases?

These are questions that are certainly very important to every one who, in any way, bears relation to these diseased conditions, and should be answered as far as it may be possible for us to answer them.

Let us first look at the relative value of albumin in the urine as a diagnostic sign of disease. At one time the discovery of albumin in this excretion was considered an almost fatal omen, but now the area of its deadly significance has been so circumscribed in many particulars, that it no longer is pathognomonic of even a serious lesion of the kidneys. Indeed, we are now looking upon this excrementitious product in two widely different ways, as physiological and pathological. So far as we now know, a certain small quantity of albumin in the urine is not incompatible with health, even though it occurs at frequent intervals for a long period of time. Generally, it is true that this so-called physiolog-

[1] Read before the Mississippi Valley Medical Society, September 12, 1889.

ical product is the result of abnormal physical conditions; as, for example, the consequence of severe bodily exercise or undue mental strain. Persons passing such small quantities of albumin for months, or even years, have had a sudden cessation of this excretion and have never more been so disturbed, and, consequently, it could not have been the result of serious kidney lesions. The fact, however, that these small quantities of albumin occur often in other well-recognized pathological conditions in parts remote from the kidneys, is very significant, and points, if in any direction, toward a common pathological condition involving large areas of the body. When the facts are all in, we need not be surprised if this so-called physiological albumin is a factor in the early diagnosis of widely diffused pathological changes, which occur in common with kidney lesions in the initial stage. Our knowledge, as yet, is too meagre, however, to affirm this conjecture, and we must at present regard this excretion in the light of suspicion without attaching much importance to its diagnostic value.

Pathological albumin, on the other hand, has received too much credit as a guide to structural renal diseases, and within the last few years has lost its former dread and cannot longer be considered as pathognomonic of kidney lesions. That it occurs often in these diseases cannot but be affirmed by all careful observers; still the cases are quite numerous that either do not present this diagnostic sign at all during the course of the disease, or fail to do so at longer or shorter intervals during the progress of very destructive changes in these organs. Post-mortems have developed the fact that many persons have died from evident kidney diseases without the fact becoming apparent by careful examinations of the urine for albumin at frequent intervals. Again, albumin is found in the urine in large amounts without necessarily emanating from diseased kidneys, such as is caused by the hydrostatic variation in these organs incident to cardiac or lung lesions, pressure of tumors, or from irritation in the central nervous system. Albumin may also occur as the result of systemic disturbances, such as the infectious fevers, and may pass away with the general convalescence, or may remain as an evidence of a permanent lesion. Some local disorders involving the urethra, bladder, or ureters, furnish often abundant evidence, if not recognized, of serious destruction of the kidneys,—as gonorrhœa, cystitis, and other inflammatory diseases.

In well-marked Bright's disease, albumin generally is found some time during its course, yet the variation of this product makes diagnosis often uncertain, if this were the only means at our command. This albumin varies from day to day, being great at times and almost absent at others; occurring in the morning urine and not in the evening, or the reverse may be true. It may be found in some varieties of Bright's disease, and scarcely if ever in other forms of this malady. The albumin most sought in these tests is common to all the cases included under chronic Bright's

disease, and is also common to the acute forms of the same, and cannot therefore be held as a definite diagnostic sign of any of these diseases, or as an unvarying factor in differentiation.

As Bright's disease is, according to my belief, the result of constitutional disturbances which involve at first nutrition and thereby the general integrity of the tissues and consequently of the kidneys, it is evident that by the time albumin makes its appearance in the urine the disease has, in all chronic forms, gone on for some time, and while we must acknowledge the importance of albumin in the urine at this time as quite conclusive, with the exceptions noted, still at this stage many of such patients die after a series of explosions, which intervene at longer or shorter intervals, and consequently the knowledge so gained is of very little value to the patient, however interesting it may be to the scientific physician.

If we look for casts, in our effort to evade a fatal malady, we find that we are in equally as great a dilemma, since casts are the consequence of the uncertain conditions already referred to, with additional uncertainties. Casts may be found very abundant in the beginning of serious lesions of the kidneys, or very few in number. They may be absent altogether. If casts are found, albumin has already appeared in the urine and given its warning, and consequently casts must rank second as evidence in the early diagnosis of chronic kidney lesions. The character of the cast often, no doubt, enables us to differentiate between the varieties of chronic Bright's disease, and may give knowledge also of the length of time the inflammatory conditions have existed, all of which again profits the patient but very little. We have in all cases to deal with a chronic inflammation which is diffuse, and while it involves different tissues in the beginning, and has often a different history, still very soon enough of the kidney structure is involved or encroached upon to produce in all cases the same clinical results, and so far as the early differentiation of these varieties is concerned, it is of scientific value rather than an aid in our present need.

Several papers have been written during the past two years in support of the specific gravity of the urine as a diagnostic sign of chronic kidney lesions, and some notion akin to this has crept into books bearing the names of prominent authors. The specific gravity of the urine could mean nothing more than the relative measure of all the elements held in solution. Therefore, if a urine was of relatively low specific gravity, it might mean that the quantity of water passed was very great, or that the products held in solution were few. These products might bear almost any relation to each other; that is, the urine might be loaded with phosphates and be relatively quite heavy, while the quantity of urea, carbonate of ammonium, uric acid, and other suspended salts might be very small in amount. If it be true that the specific gravity bears any relation to diseased kidneys, it must be the mean spe-

cific gravity of many often-repeated examinations of known quantities of urine for given times, as it would then indicate something of a measure of the total toxicity of the salts held in the blood, or the permeability of the kidneys. My experience has been that urine passed by patients with evident kidney lesions is frequently of relatively high specific gravity, due generally to large quantities of the phosphates, or carbonates, or both. If often-repeated examinations of urine from the same patient should show, however, a constantly low specific gravity for normal quantities of urine, it would then point to some disturbance in the excretory organs, or that some one or more of the salts were not produced in normal quantities in the blood. Since, however, urea—if not the only product excreted having toxic influence—is diminished in cases of serious lesions of these organs, and generally is the dominant salt, it would be fair to state, that all other products being excreted in their normal quantities, the urine would have a more or less relatively low specific gravity when compared with the known daily quantity of urine excreted. The specific gravity without this knowledge would be of little, if any, value in the diagnosis of such lesions. And none of the writers, so far as I am aware, have taken these conditions into consideration.

No diagnosis of these lesions can be complete without a perfect knowledge of the outward symptoms of the patient, and the value of any other knowledge must depend upon a constant relation which is found to exist between these physical conditions of ill health and the defect in excretion. If it were possible, in other words, for a patient to pass albumin and casts for years and no signs of ill health intervene, it would go far to disprove the value of these as a diagnostic sign of pathological conditions in that individual, and if this were the rule no importance could be attached to their excretion in the urine. It is fortunate, therefore, that during the time, at least, that these products are being thrown out, the patient has well-marked symptoms of ill health. It is still more fortunate that these outward manifestations of disease are the first presented, and are more or less constant, not only in the individual, but for the whole group so passing albumin and casts. While there are occasional exceptions to this rule that make differential diagnosis difficult in the beginning, still there is such a constant association as to be in great part relied upon at this stage of the disease. These symptoms are dyspnœa, vertigo, blindness, nausea, vomiting, swelling of extremities or face, twitching of any or all muscles, a feeling of being constantly tired without exertion, pain in intercostal region or extremities, headache, smarting pain on passing water, with frequent desire to urinate, a constant tendency to inflammations of serous membranes, with frequent evidence of some form of these inflammatory results upon careful physical examination. All of these symptoms go to make a picture of typical cases of persons suffering from these lesions, yet the presence of two or more constant symptoms, if accompanied with albumin and casts, will complete with

accuracy the diagnosis of the case. The association, therefore, of these external evidences constantly with the excreted evidence, leads us to know to a reasonable certainty that one group being found in such well-marked cases, the other is sure also to be present. In milder cases, however, the excretory evidence is not always found, still these patients are suffering with evident diagnostic signs of diseased kidneys, and faithful examinations for a long time will generally be rewarded by this additional confirmatory evidence. At this stage, however, many of our patients die, and it seems sad indeed that so much effort has been expended without a greater benefit accruing to the sufferer.

It was at this point that more than five years ago I began to inquire why it was that patients answering in many respects those with marked kidney lesions, did not confirm this diagnosis by also passing albumin and casts, and what was the diagnostic sign that should bind these two groups of patients in one common class.

Authorities at this time stated that excess of urea was found in the blood of patients dying from these lesions, and that a lessened quantity was daily excreted in cases having the additional evidence of albumin and casts, and yet no careful records, so far as I know, had been made of the pathological variations of urea for definite quantities of urine for twenty-four hours, and extended at frequent intervals for months and years, for this class of patients. Authorities even now put no especial stress on the amount of urea as a diagnostic sign of chronic kidney lesions. In reviewing my records of cases for these years, I find that not a case appears in which other evidence, as albumin and casts, was present, that has not shown a constantly diminished average quantity of urea excreted in twenty-four hours, and I now regard this evidence as constant, whereas the others are variable.

Diminished quantities of urea excreted for twenty-four hours and continued for some months, in persons otherwise healthy and living on a mixed diet, can be taken as pathognomonic of kidney lesions, and this condition may exist in individuals giving no other evidence in the urine of such disease. After months of careful and painstaking efforts we may have our curiosity gratified by finding that the patient passes albumin or casts for the first time. If several such patients have followed the same doleful road and we have found albumin at frequent intervals in pathological quantities, and after their deaths have made post-mortems that demonstrated chronic nephritis, we can then say, we think with great force, that this pathognomonic evidence that exists together with albumin is also the evidence of serious conditions that precede these fatal cases. If, now, these patients who do not pass albumin or casts have other pronounced symptoms, such as vertigo, nausea, general weakness, œdema, as in well-marked cases, with absence of all other signs of disease, after careful examination, we would have the right to affirm that there

was a very intimate relation between these two classes of patients, if they are not indeed, in other respects identical. I am as certain as I can be of anything, after careful study and something over a thousand examinations, that this relation does exist, as I have verified it many times among these patients; having had patients after two or three years, with all outward evidences of these lesions, suddenly begin passing albumin and casts and finally die of what a post-mortem showed to be chronic nephritis.

I do not know whether urea is the only irritating agent in these cases, and that creatin or creatinine be the form in which it finally produces its injurious results, or whether it is simply the expression of a constitutional disease which is in common with the kidney lesions. What I do know is, that there is always a relation existing, as shown by clinical observation and careful tests, between small eliminated quantities of urea and the general ill feeling of the patient, and that this same relation holds equally good whether patients are now passing albumin and casts or whether they are free from this symptom, and that the only thing needful in urinary tests is a record of these diminished quantities of urea for twenty-four hours, for long periods of time, together with the symptoms. It is very remarkable that these two factors, *i. e.*, the symptoms and the knowledge of urea, should be interchangeable, *i. e.*, if a patient passes constantly small quantities of urea, living on a mixed diet and otherwise healthy, we can predict with certainty that such patient will complain of some of the prominent symptoms before referred to in this paper, as belonging to chronic lesions of the kidneys, even months and years, it may be, before other urinary diagnostic signs make their appearance. So well established do I consider these deductions, that I deem it no longer necessary when such a patient presents himself, to wait until albumin and casts are passed, to begin a vigorous line of treatment, to try, if possible, to avert the result that often obtains otherwise after a longer or shorter time.

This brings me to another and very valuable means at our command so thoroughly to circumscribe this disease that we know it can be no other; and I now refer to treatment. If there be a doubt left concerning the diagnosis of a case passing constantly ten or twelve grammes of urea in twenty-four hours, and otherwise healthy, with the accompanying signs of vertigo, nausea, general weakness, pallor, and dyspnœa, a few doses of a saline cathartic will effectually dispel it, as the remedy has never played any important curative place in anæmia and general weakness from other causes. Such a patient after free evacuation of the bowels will become steady, have a better appetite, lose the dyspnœa, and become stronger. If now a diuretic be given, and the renal structure is not too much involved, the patient will pass after a few days an increased quantity of urea, and just in proportion as the urea increases will the bad symptoms be ameliorated. Would we treat patients with these

symptoms from other causes in that way? What makes the proof doubly strong is the fact that many of these patients have gone the rounds for years among doctors who have tried to redden their lips with iron and other tonics, but still the same pallor existed, and because no casts or albumin could be found in the urine at one or two examinations they put a pessary into the vagina, or discovered a deep rectal ulcer. A climacteric must be passed, or puberty was involved. The patient had dyspepsia or pernicious anæmia, that with the burden of drugs grew no better. What is most gratifying, is, that after proper treatment many of these patients, who answer in all other respects to well-defined Bright's disease, grow better and, according to all tests, are apparently well. A few remain about as when first found, and a still smaller class pass albumin and casts and die according to the rule with such cases.

In papers read before the Indiana Medical Society, in 1886 and 1887, and again before the Mississippi Valley Medical Society in 1888, I stated that I believed, that from all the evidence that I then had, Bright's disease was not simply a lesion in the kidneys, but that more or less extensive areas were involved primarily, and that the kidney lesions were simply a part of this general condition. I am glad to say that there is a growing tendency among the profession to this view, and when all the facts are in concerning these constitutional disturbances, we will know more of other diagnostic signs that precede the more serious illness. If it be true, as I believe and have advocated in these papers, that extensive inflammatory changes take place in serous membranes at or before the time the kidneys are involved, then the evidence in other regions of the body would lead to the conclusion that if the kidneys are not so diseased, such a condition was threatening or probable, or at least possible, and we should then advance one more step in the diagnosis of this deadly disease. It is quite probable that some irritant or irritants first appear in the blood to affect nutrition and thus bring about these extensive changes, but I am unable to affirm this conclusion. What I do know is, that at or preceding the time these changes are taking place in the kidneys, evidence may often be found in other regions of the body of inflammation of serous membranes, and that, associated with these phenomena, urea is eliminated during twenty-four hours in much smaller quantities than in health.

I therefore, in conclusion, present the following synopsis, which, so far as pertains to my efforts in these investigations, I submit for proof or disproof.

Albumin in the urine probably means disease somewhere in the body. In so-called physiological quantities it probably may be referred to disease removed from the kidneys, and is as transient as the cause. In pathological quantities it signifies either inflammation external to the kidneys or a lesion of these organs. Many patients do not pass albumin with evident kidney lesions. Albumin is inconstant and bears no rela-

tion to the extent of the lesion, but when present must be respected as a prominent factor in diagnosis. It generally makes its appearance a long time after other well-marked symptoms have existed, and the disease is grave when it exists in pathological quantities and should not therefore be waited for.

Casts bear an intimate relation to albumin, but appear later. They are strong proof of renal inflammation, as they carry, usually, a part of its epithelium. Differential diagnosis of the varieties of kidney lesions can often be made from this fact, but casts, like albumin, are inconstant, many patients not passing them at all, and they always appear too late to be a factor in early diagnosis.

The specific gravity of the urine is not to be relied upon unless the mean specific gravity of many specimens is taken of known quantities of urine for twenty-four hours. This would mean a small amount of urea passed within this time, since it is the dominant salt eliminated; Therefore, why not test for urea at once?

Some outward manifestations of ill health always precede for some time, often years, the passing of albumin and casts. These symptoms are in common with well-marked kidney lesions and are not due to other discoverable physical causes. Cases often, without a change in these symptoms for years, begin passing albumin and casts. It is fair to assume, therefore, that the symptoms referred to are the result of some common cause, which precedes the pronounced kidney lesions. This common cause seems to be something which produces extensive and often remote inflammations of serous membranes, which at the time, or remotely, involves the kidneys. What this cause is, we can at present only conjecture, but many of its pathological effects might be turned to advantage in early diagnosis.

Urea is excreted in abnormally small quantities in cases of well-marked kidney lesions. It is also so excreted in cases having the prominent physical symptoms without albumin and casts. It is interchangeable as a means of diagnosis with the outward signs of the disease, *i. e.*, a knowledge of the condition of ill health being also a knowledge of the amount of urea passed, and *vice versa*. Urea is excreted in small quantities months and often years before albumin and casts appear and therefore a knowledge of this excretion is invaluable as a diagnostic sign of early lesions. The diminished quantity of urea eliminated is the result of the constitutional disturbances which precede for long intervals of time the local lesion. Active treatment which would not be beneficial in other diseases having some symptoms in common, identifies this, generally relieves, and frequently apparently cures.

A brief reference to the following table will doubtless make these statements more intelligible and show from what source they are derived.

Fifty Cases passing Small Quantities of Urea that have been under Observation from Two to Five Years.

Table I.—*Patients passing large quantities of albumin with casts and excreting constantly small quantities of urea, who finally die.*

No.	Age.	Sex.	Years under observation.	Examination of urine.									Prominent symptoms.	Complications.	Treatment.	Termination.
				Number of examinations	Aver. ounces in 24 hours.	Albumin.	Casts.	Aver. specific gravity.	Aver. per cent. of urea.	Aver. grams of urea in 24 hrs.	Min. grams of urea in 24 hrs.	Max. grams of urea in 24 hrs.				
1	56	M.	...	10	16	Yes	Yes	1018	2¾	12	7	14	General weakness, headache, nausea, vertigo, dyspnœa, swelling of extremities.	During course of disease had pleurisy.	Saline cathartics, diuretics, sudorifics	Post-mortem showed chronic interstitial nephritis.
2	35	F.	...	8	22	Yes	Yes	1012	2	13	10	15	Dyspnœa, pain in intercostal region, insomnia, nausea, swelling of face and extremities, and finally of abdomen.	Hypertrophy of heart.	Saline cathartics, diuretics, tapping abdomen, sudorifics	Post-mortem showed chronic interstitial nephritis.
3	38	F.	...	12	18	Yes	Yes	1015	2	11	7	18	Pain in intercostal region, twitching of muscles, nausea, vertigo, general weakness, swelling of extremities.	None.	Saline cathartics, diuretics, anodynes, sudorifics.	Post mortem showed chronic parenchymatous nephritis.
4	48	M.	...	6	25	Yes	Yes	1018	2	15	11	15	Dyspnœa, general weakness, loss of appetite, pain in intercostal region, vertigo, swelling of lower extremities.	Periodical attacks of asthma.	Saline cathartics, diuretics, sudorifics, stimulants.	No post-mortem allowed.

TABLE II.—*Patients passing neither albumin nor casts, but a constantly diminished average quantity of urea, who finally die.*

No.	Age.	Sex.	Years under observation.	Examination of urine.								Prominent symptoms	Complications.	Treatment.	Termination.
				Number of examinations.	Aver. ounces in 24 hours.	Albumin.	Casts.	Aver. specific gravity.	Aver. per cent. of urea	Aver. grams of urea in 24 hrs.	Min. grams of urea in 24 hrs	Max. grams of urea in 24 hrs.				
5	65	F.	...	10	26	No	No	1013	1½	14	4	24	Has intercostal pain, general weakness, vertigo, blindness, nausea, irritable heart, dyspnœa, swelling of extremities.	Endarteritis; finally became insane.	Saline cathartics, pil. nitro-glycerin, sudorifics, hypnotics.	Post-mortem showed endarteritis of large arteries with parenchymatous nephritis.
6	57	M.	...	13	34	No	No	1012	1½	15	12	21	Numbness of lower extremities, vertigo, general weakness, pain in chest, headache, insomnia, twitching of muscles.	No other disease could be detected	Saline cathartics, diuretics, sudorifics, stimulants.	No post-mortem allowed, but died from evident uræmia.
7	70	M.	...	8	20	No	No	1010	2	12	8	20	General weakness, vertigo, nausea, dyspnœa, symptoms have continued for several years.	No other organic lesions discovered.	Digitalis, cathartics, stimulants at times.	No post-mortem; died from apoplexy with evident kidney lesions.

TABLE III.—*Patients passing constantly small average quantities of urea, but for several months unaccompanied by albumin or casts, who then pass albumin and casts, and ultimately die.*

No.	Age.	Sex.	Years under observation.	Examination of urine.								Prominent symptoms.	Complications.	Treatment.	Termination.
				Number of examinations.	Aver. ounces in 24 hours.	Albumin.	Casts.	Aver. specific gravity.	Aver. per cent. of urea.	Aver. grams of urea in 24 hrs.	Min. grams of urea in 24 hrs.	Max. grams of urea in 24 hrs.				
8	46	F.	...	9	32	Yes	Yes	1011	1⅛	13	5	19	Had headache, vertigo, nausea, general weakness, dyspnœa, pain in intercostal region, slight swelling of limbs.	Insanity; no other organic lesions discoverable.	Digitalis, sudorifics, anodynes, hypnotics.	No post-mortem allowed, but died with evident kidney lesions.
9	60	M.	...	16	40	Yes	Yes	1016	1¼	15	7	30	Dyspnœa, exhaustion, constant pain in right side of face, insomnia, pain on passing urine.	No other organic disease could be found.	Nitro-glycerin, saline cathartics, sudorifics, quinine.	None allowed, but died from evident uræmia.
10	65	M.	...	10	72	Yes	Yes	1014	¾	16	19	14	Intercostal pain, exhaustion, nausea, insomnia, extreme dyspnœa at times; passed small calculi frequently.	No other disease discoverable.	Nitro-glycerin, saline cathartics, sudorifics, hypnotics.	Post-mortem: parenchymatous nephritis, with pelvis of kidney filled with calculi.

TABLE IV.—*Patients who pass a diminished average quantity of urea accompanied occasionally by albumin and casts, who partially or wholly recover.*

No.	Age.	Sex.	Years under observation.	Examination of urine.								Prominent symptoms.	Complications.	Treatment.	Termination.
				Number of examinations.	Aver. ounces in 24 hours.	Albumin.	Casts.	Aver. specific gravity.	Aver. per cent. of urea.	Aver. grams of urea in 24 hrs.	Min. grams of urea in 24 hrs.	Max. grams of urea in 24 hrs				
11	29	M.	2	14	24	Yes	Yes	1017	2	14	7	24	Extreme œdema in legs to body, extreme dyspnœa, insomnia, vertigo, had several previous attacks; pulse 120, temp. 100° at first visit.	No other discoverable lesion.	Nitro-glycerin, diuretics, sudorifics, saline cathartics.	Patient recovered in 4 months, but has tendency to relapse on exposure.
12	20	F.	4	20	34	Yes	Yes	1012	1⅓	14	9	21	Constant headache, nausea, pain in intercostal region, swelling of extremities, vertigo, general weakness.	Chorea in right leg; no other evidence of disease.	Nitro-glycerin, sodii bromidi, diuretics, sudorifics.	At one time was apparently well, but is now worse.
13	30	F.	5	10	38	Yes	Yes	1016	1	11	8	24	Vertigo, nausea, slight swelling of extremities, exhausted, pale, dyspnœa on slight exertion, painful micturition.	No other evidence of disease.	Diuretics, nitro-glycerin, sudorifics, saline cathartics.	Had child 2 years ago without accident, but is now not so well
14	43	F.	5	12	25	Yes	Yes	1014	1¾	12	7	21	General exhaustion, headache, vertigo, nausea, intercostal pain, smarting pain on passing urine.	Had rectal ulcer, but same symptoms continued after it was healed.	Diuretics, saline cathartics, sudorifics.	Patient greatly improved after several relapses.
15	36	F.	4	10	30	Yes	Yes	1018	1½	14	7	20	Pain in back, headache, very nervous with irritable heart, losing flesh; symptoms had continued for long time.	Careful examination showed no other disease.	Diuretics, sudorifics, saline cathartics.	Patient has had child since, and has wholly recovered.
16	37	F.	5	15	32	Yes	Yes	1020	1¼	12	6	21	Vertigo, insomnia, intercostal neuralgia, nausea; patient was most of time in bed from exhaustion for six months previous.	Could find no other evidence of disease.	Nitro-glycerin, sudorifics, saline cathartics	Patient now apparently well, and has been so for more than a year.
17	56	M.	4	6	20	Yes	Yes	1018	3	18	14	28	Headache, nausea, general weakness, irregular pulse, insomnia, slight swelling of extremities.	No other organic lesions discoverable.	Saline cathartics, nitro-glycerin, sudorifics, digitalis.	Patient at last report was apparently well.
18	30	F.	4	12	28	Yes	Yes	1020	2	17	7	27	Exhaustion, weakness, headache, nausea, swelling of hands, painful micturition; symptoms had continued for two or three years previous.	No complications discoverable.	Saline cathartics, nitro-glycerin, sudorifics.	Patient after several relapses is now apparently well.

19	32	F.	5	40	32	Yes	Yes	1021	2	18	6	33	Pain in intercostal nerves, dyspnœa, vertigo, nausea, weakness, swelling of extremities, numbness of extremities, painful micturition.	Had three attacks of pelvic cellulitis; had periodical asthma (hay fever).	Nitro-glycerin, saline cathartics, sudorifics, anodynes.	Patient is now apparently well.
20	34	F.	4	14	38	Yes	Yes	1021	1¾	19	10	30	Constant pain in intercostal region, exhaustion on exertion, œdema of the eyelids, headache, nausea, vomiting, swelling of feet.	No other organic disease present.	Nitro-glycerin, saline cathartics, sudorifics.	Patient has been apparently well for a year past.
21	41	M.	4	6	24	Yes	Yes	1019	1½	11	5	19	General weakness, vertigo, nausea, slight œdema of extremities, intercostal neuralgia; symptoms have continued for a long time.	No complications discoverable.	Saline cathartics, nitro-glycerin.	Patient rapidly recovered, and has been well since.
22	21	F.	3	8	30	Yes	Yes	1020	1¼	12	7	16	Has lost flesh for six months; been treated for other diseases; has nausea, vomiting, vertigo, slight œdema of extremities, insomnia.	Has no other discoverable disease	Saline cathartics, nitro-glycerin, sudorifics.	Patient after relapses is now apparently well.
23	54	M.	2	6	28	Yes	Yes	1018	2	47	13	30	Pain in side, dyspnœa on slight exertion, headache; had symptoms for more than a year when first seen.	No other organic lesion discoverable.	Nitro-glycerin, saline cathartics,	Patient recovered rapidly, and is now well.
24	40	F.	2	6	32	Yes	Yes	1015	2	19	14	25	Dyspnœa, intercostal neuralgia, vomiting; hands, face, and extremities œdematous; exhaustion; large quantity of albumin.	Otherwise healthy	Nitro-glycerin, saline cathartics, sudorifics	Had child 1 year afterward without accident, and is now apparently well.
25	25	F.	2	8	24	Yes	Yes	1017	2½	18	10	26	Headache, nausea, exhaustion, œdema of extremities, intercostal neuralgia.	Had pelvic cellulitis 2 years ago; had puerperal convulsions last June; mitral murmur.	Nitro-glycerin, sudorifics, anodynes, saline cathartics.	Patient is now apparently well, except valvular lesion.
26	24	M.	2	6	16	Yes	Yes	1020	3	16	14	17	Vertigo, pain in side, nausea; been sick for several months previous; treated for various diseases.	Had no other discoverable lesions	Nitro-glycerin, saline cathartics, sudorifics	Patient is very much improved, but not well.
27	24	F.	2	8	34	Yes	No	1019	1	10	6	22	Extreme dyspnœa, vertigo, general weakness, extreme œdema of extremities; face also swollen; painful micturition.	Had no other evidence of disease.	Nitro-glycerine, sudorifics, saline cathartics, potassii bicarb.	Patient rapidly recovered, and is now well.
28	57	M.	2	6	38	Yes	No	1020	1½	17	14	25	Great dyspnœa, extremities much swollen; had had such explosions for last five years previous to treatment.	Had chronic pleurisy on both sides with effusion.	Nitro-glycerin, sudorifics, saline cathartics, alcoholic stimulants.	Patient still not much improved.

TABLE V.—*Patients who passed small average quantities of urea, having the prominent symptoms in the other cases, who, under same treatment, recovered.*

No.	Age.	Sex.	Years under observation.	Examination of urine.								Prominent symptoms.	Complications.	Treatment.	Termination.
				Number of examinations.	Aver. ounces in 24 hours.	Albumin.	Casts.	Aver. specific gravity.	Aver. per cent. of urea.	Aver. grams of urea in 24 hrs.	Min. grams of urea in 24 hrs.	Max. grams of urea in 24 hrs.					
29	27	F.	5	20	38	No	No	1016	1½	17	4	31	Headache, nausea, exhaustion, pale, losing flesh, slight œdema of extremities, vertigo, dyspnœa.	No evidence of other organic lesions.	Nitro-glycerin, saline cathartics, sudorifics.	Patient gradually recovered after relapses, and is now well.
30	26	F.	8	16	40	No	No	1015	1½	18	8	33	General weakness, no œdema, dyspnœa on slight exercise, intercostal pain, headache, "nervous;" weight normal.	No organic lesions discovered.	Nitro-glycerin, saline cathartics, anodynes.	Married, and had babe since without accident, and is now well.
31	45	F.	4	21	48	No	No	1620	1	15	14	38	Irritable heart, headache, dyspnœa; symptoms had existed for several years; appetite good.	No other evidence of disease.	Nitro-glycerin, saline cathartics.	Grew gradually better; had child over a year ago without accident.
32	30	M.	4	10	36	No	No	1016	1½	16	12	26	Constant pain in head and limbs for several months; exhaustion, nausea occasionally, painful micturition, urine very acid.	No other disease discoverable.	Diuretics, saline cathartics.	Patient now apparently well
33	39	M.	4	12	40	No	No	1015	1¼	15	9	28	Painful micturition, exhaustion, pain constantly in left side, general weakness; symptoms had continued for several months.	Impotence for years previous.	Nitro-glycerin, saline cathartics.	Impotency no better; all other symptoms relieved.
34	70	M.	4	8	25	No	No	1018	1¾	16	7	27	Was confined to bed from extreme exhaustion when first saw him; dyspnœa, headache, nausea, œdema of extremities.	No other disease discoverable.	Diuretics, saline cathartics, sudorifics.	Made rapid recovery, and is now well.
35	41	F.	4	20	26	No	No	1018	1½	12	5	28	Headache, insomnia, exhaustion, nausea at intervals, slight œdema of extremities, painful micturition.	Periodical "sick headaches."	Diuretics, saline cathartics, nitro-glycerin.	Is apparently well.
36	36	M.	4	14	25	No	No	1017	2	15	9	28	For two years had been constantly having pain in stomach and intercostal region; losing flesh, vertigo, exhaustion.	Chronic gastritis; no other disease discoverable.	Nitro-glycerin, saline cathartics, sudorifics	Grew rapidly better, and is now apparently well
37	30	F.	4	16	52	No	No	1015	⅘	12	7	24	Intercostal pain, headache, exhaustion; other treatment for months has not relieved; vertigo, slight œdema of extremities.	No complications.	Diuretics, saline cathartics.	Got much better; got wet, and relapsed; now apparently well.
38	45	F.	4	10	21	No	No	1015	1⅘	11	5	23	Vertigo, exhaustion, headache, œdema of feet and limbs, "nervous;" symptoms continued for several months previous.	No complications discoverable.	Nitro-glycerin, saline cathartics.	Tests showed a much larger average quantity of urea, and patient is better.

39	36	F.	4	21	34	No	No	1016	1¼	13	4	25	Palpitation, very "nervous," exhaustion, vertigo; hands tremble on slight exertion; swelling of feet and limbs.	Well nourished, and no complications.	Nitro-glycerin, saline cathartics, sodii bromidi.	Patient improved rapidly, and is now well.
40	15	F.	3	8	50	No	No	1018	⅘	12	12	24	Vertigo, nausea, intercostal pain, exhaustion, dyspnœa on slight exertion, headache, pale.	Other functions normal.	Nitro-glycerin, saline cathartics.	Is now apparently well.
41	68	F.	3	12	30	No	No	1017	1⅘	16	10	22	Headache, nausea, vomiting, vertigo, exhaustion; compelled to take bed often.	No other lesions.	Nitro-glycerin, anodynes, saline cathartics.	Well for one of her age.
42	40	M.	3	14	24	No	No	1018	2⅗	17	17	23	Headache and backache almost constantly; intercostal pain, exhaustion, vertigo, occasional nausea; unable to work much of time.	No other disease discoverable.	Nitro-glycerin, saline cathartics, other remedies had failed.	Improved from first, and is at this date well.
43	38	F.	3	18	26	No	No	1021	2	16	7	22	Nausea, headache, itching, vertigo, intercostal neuralgia almost constantly; had scarlet fever two years previous, and symptoms began then.	None discoverable	Nitro-glycerin, saline cathartics, sudorifics.	Is now apparently well.
44	75	M.	3	14	48	No	No	1020	1¼	18	11	23	Limbs swollen to body, extreme dyspnœa, intercostal neuralgia, headache, exhaustion; appetite good; pulse irregular; heart slightly enlarged.	No heart murmur, well nourished; no other evidence of disease.	Nitro-glycerin, saline cathartics, sudorifics, anodynes.	Rapidly recovered from bad symptoms, and is now comfortable.
45	25	F.	2	8	100	No	No	1008	⅛	10	5	27	Intercostal neuralgia, extreme œdema of legs, pale, menstruation stopped, hands and feet œdematous, vertigo; complained for several months previous.	Unmarried; not pregnant; no murmur; well nourished; no other evidence of disease.	Saline cathartics, sudorifics, nitro-glycerin.	Recovered in 5 weeks; has had no relapse, and is now well.
46	61	M.	2	10	41	No	No	1017	1⅕	18	13	28	Dyspnœa, headache, intercostal pain, exhaustion; symptoms had continued for many months; painful micturition at times.	No other evidence of disease could be found.	Saline cathartics, sudorifics, nitro-glycerin.	Is now apparently well.
47	6	M.	4	5	16	No	No	1020	2	9	6	18	Painful micturition for some months, extreme œdema of limbs, headache, pain in side.	Careful examination revealed no other disease.	Epsom salts, diuretics, potassii bicarb., fl. ext. buchu.	Rapidly recovered, and has remained well.
48	59	M.	4	20	32	No	No	1117	1⅘	15	12	29	Has continual lumbar pain, vertigo, insomnia, exhaustion; atheromatous degeneration of arteries; œdema of limbs.	Cerebral hemorrhage after two years from first examination.	Nitro-glycerin, saline cathartics, sudorifics.	Head symptoms not much improved, but otherwise more comfortable.
49	24	F.	2	8	34	No	No	1019	1	16	8	24	Extreme dyspnœa, vertigo, exhaustion, extreme œdema of limbs; hands and face swollen; pain on passing water; symptoms had continued for months.	No discoverable disease of heart, lungs, or other organs.	Nitro-glycerin, saline cathartics, sudorifics.	Improved very rapidly, and is now well.
50	60	M.	4	8	32	No	No	1020	1½	14	8	28	Extreme dyspnœa; was confined to chair; feet and legs much swollen, nausea, vertigo; twitchings of muscles; pulse irregular.	Lungs and heart healthy; no other discoverable disease.	Nitro-glycerin, digitalis, saline cathartics.	Much better in 6 weeks, and has had but one or two attacks since.

THE EXPEDIENCY OF OPERATING AT ONE SITTING UPON THE BLADDER AND KIDNEY, WITH REPORT OF A CASE IN WHICH THE DOUBLE OPERATION WAS DONE.

By Louis McLane Tiffany, M.A., M.D.,
Professor of Surgery in the University of Maryland.

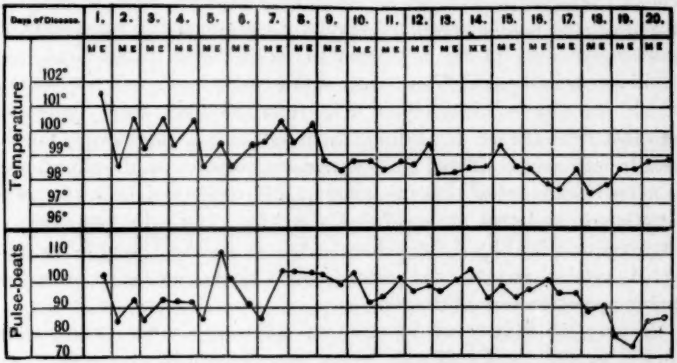
The necessity for several operations upon the urinary organs of one person does not often arise, and the following case recently in my care has been so suggestive as to warrant record.

J. B., male, white, aged fifty-six years, usual weight 150 pounds, now much lighter, was seen by me in June, 1889, and gave the following history: In 1884 he had an attack of what was called kidney colic by the physician in attendance; in March, 1887, he began to pass water frequently, then pain over the pubes was noticed, and discomfort in the perineum, especially after driving or other active exercise; in April, 1888, the calls to pass water were so frequent and so imperative that a rubber urinal was obtained and has since then been continually worn by day. A white deposit has been noticed in the urine during the past few months. Discomfort in the region of the left short ribs was noticed in March and still continues. The patient has often found his urine suddenly to cease flowing before the bladder had emptied itself, and on such occasions with a soft-rubber catheter he has obtained relief. Washing out the bladder with warm water has been tried but without advantage. Dryness of the mouth, especially for the past month or two, has been very annoying, and there is a clear history of exacerbations and remissions in intensity of symptoms during the past six months.

J. B. consulted me first at my office: his complexion was pasty, his pulse 100 to the minute, he sat down, and rose from a chair carefully so as to avoid jarring. I at once sounded, striking a stone not of large size nor of hard consistence. A lump painful on handling could be made out in the region of the left kidney by examination from in front; pain was elicited by pressure along the course of the left ureter. The patient was sent home, kept quiet, the bowels as well as the diet were regulated, and the urine examined. This latter was in fair amount, was alkaline and contained much pus, but one specimen, obtained the second day after coming under observation, was tolerably clear and distinctly acid. No casts were found, but they may have been masked by pus. Stone in the bladder and abscess in the left kidney were evident; I thought it probable that the right kidney was fairly healthy else the urine obtained as stated above would not have been so acid.

J. B. was sent into a private room at the University Hospital that he should be continuously under observation. During four days the temperature varied between 99° and 102° F., and other symptoms were not more favorable; so on the fifth day I opened the kidney through the usual incision in the loin, evacuating an ounce or so of pus, and then removed a stone by lateral lithotomy from the bladder. The kidney parenchyma where incised was about one-quarter of an inch thick; I attempted ineffectually to pass a soft instrument into the bladder from the abscess cavity along the ureter.

A good deal of shock followed the double operation; the same evening, however, the pulse was 112, and the temperature 99.5° Fahr. All went well for a week, when diarrhœa began, with irritable stomach and diminished secretion of urine. Dr. I. E. Atkinson, who saw the patient with me, suggested uncooked egg albumen as nourishment, so I ordered treatment and food as follows: white of egg ℥iss with blackberry brandy ℥ss every hour; Tinct. digitalis ♏v hypodermatically every four hours; an enema of starch-water q. s., with Tinct. opii deodor. gtt. xxx after each passage. Nothing else save crushed ice by the mouth was given. Improvement was shortly evident, the enemata were discontinued, then the digitalis; the egg and brandy was continued for ten days, when a more liberal diet was gradually permitted. A drainage tube was worn in the kidney wound for fifteen days; rapid healing followed its removal. The perineal wound was quite healed in less than three weeks. The patient went to the country four weeks after the double operation.



He is now (November, 1889) well and able to attend to the usual matters claiming his attention. Both wounds are closed by normal painless scars; the urine, which is passed in a full stream, is acid, sp. gr. 1022, and contains no pus.

The case related in the foregoing history differs from the usual run, and the question is properly raised, whether it is best to operate, as was done here, upon both diseased organs at one time, or whether they should be attacked consecutively? Furthermore, it will not be without profit to consider what method should be resorted to for the removal of the stone from the bladder under similar circumstances, for it goes without saying that the kidney required incision.

There is a history clearly pointing to the gradual undermining of the patient's constitution, owing to the presence of a urinary calculus, with the usual local suffering, progressively increasing in intensity. Latterly there were periods of fever at irregular intervals, with slightly chilly sensations occasionally, not amounting to rigors but yet pronounced enough to attract the patient's attention. Now, if there is one thing

more clear than another in the surgery of the urinary organs, it is that such a set of symptoms coincident with the presence of a stone in the bladder, is to be translated as indicating the subjection of new areas of kidney territory to inflammation, transmitted probably along the ureter from the bladder, each pyrexial period meaning advance, the inflammation having a tendency to pass into suppuration. Thus I was prepared to find pus, and believe that there was suppuration in the kidney pelvis, possibly, but certainly in the kidney substance, a pyramid perhaps, which gave rise to the increase in unfavorable symptoms just before I was consulted. I was therefore in presence of a case of suppurative pyelonephritis, a form of surgical kidney in which general septicæmia is liable to be induced by any operation upon the urinary tract.

The condition of the bladder was of course evident; the stone was probably phosphatic, to judge by sounding, and rectal touch showed the prostate to be not enlarged. I carefully examined the right kidney, making out that it did not seem to be increased in size and that handling gave no pain. The course of the right ureter was not tender. I could not with certainty obtain urine from the right kidney unmixed with that from the left for examination, but as one specimen of urine, already referred to, differed from specimens obtained at all other times, I inclined to the belief that the inflamed left ureter had been temporarily stopped, and that the acid and somewhat clear urine came from a comparatively healthy right kidney. As one healthy kidney is enough for all practical purposes, my patient's outlook was now rather favorable and an operation seemed proper.

Opening the kidney would leave an inflamed bladder containing a stone with the usual suffering, while regurgitation of pus and urine through the dilated ureter and lumbar wound would be likely. On the other hand, to remove the stone from the bladder and leave a suppurating kidney would run serious risk of general sepsis. In this dilemma there came to me the idea of doing both operations at one sitting, in this way relieving both organs and giving them rest.

The proper method for the removal of the stone from the bladder now demanded consideration.

That the age of the patient was fifty-six, the stone phosphatic, the urethra capacious, the bladder able to hold several ounces of fluid and the prostate normal, were all conditions favorable to litholapaxy; in favor of perineal lithotomy was the rapidity of the operation, the complete removal of stone and absolute rest for the bladder, with excellent drainage. To this must be added my belief that a bladder at rest and draining freely would better agree with a suppurating kidney than would an inflamed bladder frequently contracting to expel its contents; in other words, free cutting followed by free drainage and complete rest was

the treatment to be followed out. The result of this reasoning has been already stated.

So favorable has been the outcome of the double operation that I am inclined to think that nephrotomy may be resorted to as a means of preventing the occurrence of diffuse suppuration. In the case related the formation of multiple renal abscesses might well have been expected if the bladder only had been operated on and the kidney neglected, yet after free nephrotomy no such untoward event took place. Elsewhere in the body diffuse suppuration is treated by free cutting to relieve tension and afford an exit for exudation; why not apply the same rule to the kidney, laying open the capsule and gland tissue so as to prevent the access of inflammatory or septic trouble?

I recall to mind a case of urethral stricture of twenty years' duration. I explored the urethra and bladder for diagnosis; the patient, a male, had a severe rigor and died in three days. Post-mortem I found several acute abscesses in one kidney. I wonder if a free nephrotomy at the time of the bladder exploration would not have been of use to my patient.

I recall another case of malignant growth in a bladder; I did a suprapubic cystotomy, finding the orifice of the left ureter almost occluded. The growth was scraped away and my patient died in five days. Post-mortem I found many acute abscesses in the left kidney and a phlebitis which had commenced in the same organ. Again I wonder if free nephrotomy at the time of the cystotomy would not have prevented the diffuse kidney inflammation and pyæmia. With my present experience I cannot avoid thinking that nephrotomy would have been of use in both of the above cases, which were undoubtedly instances of surgical kidney, probably unilateral, diffuse kidney suppuration and pyæmia being lighted up by operations on the distal urinary tract.

It seems to me, therefore, that in long-standing disease of the urinary organs, such as is liable to induce that clinical condition entitled surgical kidney, where it becomes necessary to operate upon the bladder or urethra, that it becomes the duty of the surgeon to investigate the condition of the kidneys, and if there be found present such a state of affairs as is liable to induce diffuse suppuration, or multiple renal abscesses, then at the time of the urethral or bladder operation it may be proper also to perform nephrotomy.

NOTES AND REMARKS ON THE BIRTH OF A DOUBLE FŒTUS, SOMEWHAT RESEMBLING THE SIAMESE TWINS.[1]

By Augustin M. Fernandez, M.D.,
Physician to the Northern Dispensary, New York.

At half-past seven o'clock on the evening of September 13, 1889, I was hastily called to attend Mrs. M., a native of Nicaragua, Central America, twenty-three years of age, and not quite one of marriage, who with her husband was visiting this city on their way to the Paris Exposition. The membranes had ruptured about half an hour before. When I arrived at the house I found the lady lying on a sofa in her bedroom, the floor of which was wet in several places. Questioned, she said that for two days she had been very busy, working continuously for hours at the sewing machine, and on that evening about seven o'clock, after finishing her work, she felt water dribbling along the sides of her legs. Satisfied that it was not urine, and not knowing what that flooding meant, she called for the lady of the boarding-house where she was stopping, and informed her of her condition. Both then agreed to send for me. After being told that she was already past her sixth month of pregnancy, I explained to them it would probably signify that she was going to have a miscarriage; told her to lie in bed and keep very quiet, to see if I could avert the threatened accident, although I had very little hope of succeeding. At ten o'clock the labor pains began, and I immediately ordered the necessary arrangements as to the bed, room, nurse, etc.

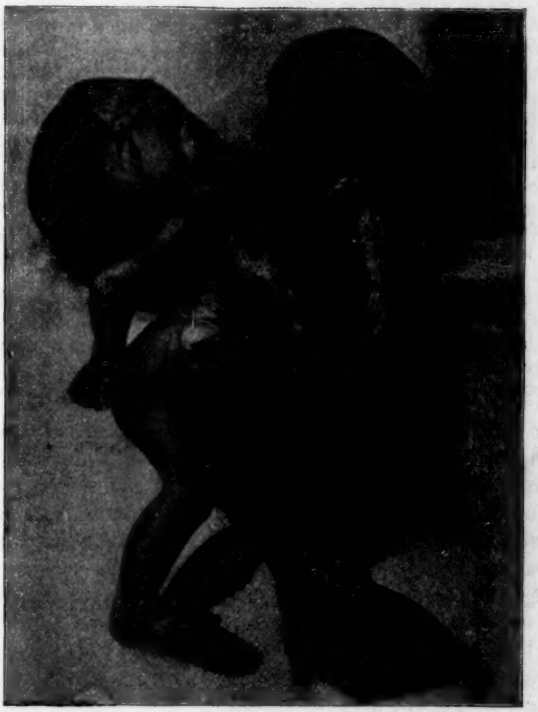
The patient would not consent to my making a vaginal examination. At half-past twelve the pains became severe and followed one another at short intervals. At one o'clock in the morning I was finally allowed to make a vaginal examination under cover of the sheet, and found to my great surprise three feet protruding about an inch through the vulvar orifice. I say *to my great surprise*, because I had not expected labor to be so far advanced. By the relative position of the three feet, two being turned upward and one downward, I knew I had a case of twins (though it might have been a single body with three legs, as the *derodymus* monster of Dr. Boerstler[2]) but the idea of their being united never crossed my mind.

The true propulsive pains then commenced, and during the intervals I made numerous efforts to push in and out of the way the foot belonging to the second child, while at the same time I took hold of the other two with my left hand. For about ten minutes I kept up this manœuvre without success. I sent then to the New York Hospital, near by, for one of the house staff for consultation. Dr. Frank P. Wilson came. Before his arrival, during a long expulsive pain, the other foot of the second child came out, and as I am gifted with very small hands, I easily introduced the right one into the vagina and ascertained the cause of the impediment. After that I decided to let the great powers of Nature operate, helping her only myself as a servant and not as a master. I saw

[1] Read before the New York County Medical Association, with exhibition of the specimen, October 21, 1889.

[2] American Journal of the Medical Sciences, vol. xxx., 1855.

immediately that I had a good inspiration, for while Dr. Wilson was holding the four legs and I rubbing the perineum with a little olive oil, the two bodies began to come out with a slight screw movement, as if to adapt themselves better for the delivery of the two heads. I exerted a little traction on the lower extremities of both fœtuses, bringing their bodies over the abdomen of the mother after they had placed themselves with their backs in the oblique diameter by spontaneous evolution. Another



propulsive pain, a little more traction, and out came the lower head, immediately followed by the upper one. It was then half-past one in the morning. The rest of the delivery had nothing worthy of record, everything being normal. The children were born dead.

The two bodies are nearly of the same size. They measured when born, one fourteen inches in length, the other thirteen and a half, and weighed four and three-quarters pounds. The circumference of one of the heads was ten and a quarter inches, and that of the other eleven and three-quarters. Around the two pelves they measured thirteen inches. They are united throughout the whole length of the sternum and upper part of the abdomen, the umbilicus, which is common to both, included;

the liver, very large and single, protruded between the two bodies. They face each other in contact, are both males and well developed.[1]

The placenta, large and single, was expelled without difficulty twenty-five minutes after the birth, the uterus contracting firmly without any hemorrhage. From the centre of the placenta sprung a single umbilical cord, of normal length and thickness for a six and a half months' pregnancy.

On the afternoon of the 14th the patient complained of a little pain in the abdomen, of a neuralgic character. Fully aware of the good results obtained in this country with quinine in the treatment of the after-pains, I prescribed four grains in solution with a few minims of hydrobromic acid twice a day. Temperature 99°.

Next day the pain had disappeared. Pulse and temperature normal.

On the 16th there was milk in the breasts, which were somewhat painful but soft. No fever. Liniment of one drachm of the extract of belladonna with an ounce of glycerine. Directed the nurse to rub this gently twice a day, covering the breasts with a layer of lint kept in position by a bandage. Ordered a dry diet.

The following day, the bowels not having moved since the 13th, I ordered a laxative of castor oil, which caused them to act twice. Pulse and temperature normal.

On the 20th the milk disappeared. The 23d the patient was allowed to sit in a reclining-chair for a few hours. Three days afterward she left her bed altogether, and made a perfect recovery, not having had the least fever in the whole period of the puerperal state, due, no doubt, to the strict observance of antiseptic rules and hygienic precautions.

From the earliest times in history congenital malformations of the newborn have attracted the attention of philosophical writers, and excited the wonder and superstition of the illiterate. In modern times the French and German languages especially abound in treatises on human monstrosities. In Italian there are three such works, one of them the recent exhaustive *Storia della Teratologia*, by Taruffi (Bologna, 1881–9). The English language contains no systematic original treatise on this subject, nor do I know of any in Spanish, except the translation of the universally known work of Dr. Geoffroy St. Hilaire.

Recently the observations of St. Hilaire have been corrected in certain particulars by Dareste (*Sur la production artificielle de monstruosités*, Paris, 1877), in accordance with the progress of embryology. The interesting and valuable researches of Wolff, von Baer, Reichert, and Allen Thomson have also been supplemented by the investigations of Panum, Förster,[2] and Lereboullet,[3] whose labors contribute much to the solution of many embryological questions hitherto based on hypothetical grounds.

[1] When they were photographed they had been in alcohol three weeks, and of course had shrivelled considerably. The flattening around the axillæ is due to the pressure of the cord by which they are suspended in the alcohol jar.

[2] Die Missbildungen des Menschen. Jena, 1861.

[3] Recherches sur les monstruosités du brochet, observées dans l'œuf et sur leur mode de production. Paris, 1863.

Dr. George J. Fisher, of New York, who has devoted more than twenty-five years of his life to the collection of works on, and the study of this interesting topic, proposes the name "Diploteratology" as a distinctive title for the special branch of teratology comprising all the compound monsters, including double and triple formations, the so-called "parasitic monsters," and *fœtus in fœtu*. The special genus or family to which my case belongs, he calls "*omphalopagus symmetros*," or symmetrical navel-joined monsters. The varieties of it range from junction by a small band (as in the Siamese twins) to a junction which extends from the top of the sternum to the lower part of the abdomen.

The distinction made by Aristotle between single and double monsters is very curious. He says that if the monstrosity has only one heart, it ought to be considered single, and if it has two then it is a double monster.[1]

Prof. W. Vrolick, of Amsterdam, claimed that a scientific classification of monstrosities is impracticable from being too cumbrous. He grouped all double monsters in three simple classes, viz: (*a*) anterior junction, (*b*) posterior junction, and (*c*) lateral junction. But for obstetric purposes, that is, for practical value, I prefer Prof. Playfair's division into four varieties, viz: (*A*) two nearly separate bodies united in front, to a varying extent, by the thorax or abdomen; (*B*) two nearly separate bodies united back to back by the sacrum and lower part of the spinal column; (*C*) dicephalous monsters, the bodies being single below, but the heads separate; (*D*) the bodies separate below, but the heads partially united. As the author himself acknowledges, this classification by no means includes all the varieties of double monsters, but it comprises all those that are likely to give rise to much difficulty in delivery.

Several theories have been advanced to explain the embryonic formation of a double monster, but the one most generally accepted is that it is the result of fecundation of an ovum with a single vitellus and vitelline membrane, upon which two primitive traces are developed. E. Bugnion,[2] speaking on this subject, says:

"The question, whether double monstrosities are developed from one or two separate germs, is only a play of words; its solution depends on the meaning given to the word *germ*. Certainly, the double monster is formed from a single germ, if we understand by the term germ the germinal vesicle, or the vitellus not fecundated; it is formed, on the contrary, from two distinct germs, if we call germ the *noyau* (cytoblast) of segmentation, the segmented vitellus, or the young embryo."

The theory before given, notwithstanding, furnishes a satisfactory explanation of the three laws governing all cases of double monsters, viz.:

[1] De generat. animalium, book iv. chap. 4.

[2] Revue Médicale de la Suisse Romande, Genève, 1889, vol. ix. p. 347.

1st. The law of unity of sex, proved by more than five hundred cases in the human species, and innumerable ones in animals. 2d. The law of homologous union; that is, the union of the two fœtuses being of exactly the same parts in each. In cases of a parasitic fœtus, or a monster within another (*fœtus in fœtu*), it has been found that the union was homologous in the early embryonic periods. 3d. The law of right and left symmetry, which means a transposition of the viscera of one of the fœtuses, in order to be immediately opposite to the corresponding viscera of the other: the heart of one child will be found on the right side, and their apices converging toward the line of fusion of the two bodies; the same is true of the two livers, the spleens, and the stomachs. This last law, however, is not so invariable as the other two.

Regarding the theory of maternal mental impressions, it is sophistical to attempt to explain with it those anomalies of organization, because corresponding malformations, in every respect identical in character, occur in animals of the lower order—such as birds, reptiles, and fishes—and, going still further, we find analogous malformations in the vegetable kingdom, where single or double monsters also abound, due, most probably, to defective or excessive formative power.

Three separations of human double monsters by surgical means are on record: One is mentioned by Ambrose Paré (*Surgery*, Book xxv., Chaps. 13 and 14, 1579); another is reported by König, in 1689, and the other by Boehm,[1] who performed the operation on his own twin daughters at the time of their birth in 1861; one of them died after three days, and the other was living at the time of the report, five years afterward. Yet in these cases the connecting band consisted only of skin and subcutaneous tissue. In the celebrated case of the Siamese twins, whose trustworthy birth-history is unknown, the autopsy, performed by Dr. Harrison Allen, of Philadelphia, demonstrated that the two livers were located in close proximity to the bond of union, and joined to each other by small bloodvessels, which were lined with a thin layer of genuine liver tissue. There was also a process of peritoneum extending through the pedicle from one abdominal cavity to the other.[2]

Little is to be found in text-books on obstetrics about the mechanism and management of labor in cases of double monsters. Few indeed will be the number of accoucheurs who have had twice in their life an experience of this kind—for they occur, according to Braun, quoted by Zweifel, once in 90,000 labors—and the writers of those cases reported in our periodical literature pay more attention to the anatomical description of the fœtuses than to the mechanism of their delivery. I myself candidly confess that I did not remember the mode in which former cases of this

[1] Virchow's Archiv., 1866.

[2] Trans. Coll. of Phys. of Philadelphia, 3d series, vol. i., 1875.

nature had been managed, and trusted, when I discovered what I had before me, to the inspiration of the moment.

As a fitting remark on this particular point, I consider worth quoting what Fanzango,[1] who had a case similar to mine, says:

> "It was a happy circumstance for the mother that she was not under the charge of a practitioner with his head full of the doctrines of the surgeon on the subject; otherwise, he, probably, would have performed some severe and dangerous operation, mutilating the children with the view of aiding delivery."

Of the nineteen cases of delivery of double monsters united in front to a varying extent by the thorax or abdomen, collected by Prof. W. S. Playfair, of London, in the appendix to his valuable memoir on the mechanism and management of such cases,[2] fourteen were delivered without using any instrument, one died undelivered, in another case the body of the anterior fœtus was amputated, and in the other three the forceps were employed. With the very limited resources at my disposition I have been able to add only five cases (mine included) to those nineteen, all of them except one (Dr. Marcy's case) delivered with but a slight assistance to Nature's efforts.

Veit, in his excellent monograph[3] on the management of delivery in cases of double monstrosity, says he found in 129 instances of monstrosities *per excessum, coalitionem, et implantationem*, only eighteen required instrumental aid. Hoht has made a similar statement.[4] In no other difficult labor more forcibly than in this variety, therefore, the old maxim that "meddlesome midwifery is bad" holds to be so good.

The great difficulty in all cases of division A is in the delivery of the two heads. When the four feet present spontaneously, the bodies pass through the pelvis parallel to each other with comparative ease; but when only three feet appear, as happened in my case, the natural inference is, of course, that the extra foot ought to be pushed out of the way to avoid head-locking. Had I known at that time that the two bodies were united into one, I would have searched for and brought out the other foot. When one of the heads presents, the more common way of delivery is for it to pass out, expelled by Nature's efforts as far as below the shoulders, if the union of the two bodies is lower than that point, or as far as the neck if the fusion is at the upper part of the sternum, the head of the second child following afterward the same way, and the rest of the body born without difficulty as in footling presentations. Exceptionally, both heads appear—one of them fitted into the cavity formed by the neck of the opposite child. Bakrow relates a case of this type

[1] Storia del mostro di due corpe. Padua, 1802.

[2] London Obstet. Soc. Trans., vol. viii.

[3] Die Geburten missgestalterer, kranker und todter Kinder. Halle, 1850.

[4] See article of Dr. Parvin in vol. i. of Hirst's System of Obstetrics. Philadelphia, 1889.

delivered by the forceps,[1] and two similar instances are recorded in the London *Obstetrical Transactions*, volumes third and sixth.

In the case of feet presentation recorded by Huron,[2] the two bodies were born as far as the thorax, and finding it impossible to deliver the heads, amputation of all that part of the anterior fœtus was performed. Speaking about this example Playfair says:

"The body was removed *en masse* by a circular incision as far as it had been expelled, which allowed the remaining portion, consisting of the head and shoulders, to reënter the uterus; after this the posterior child was easily extracted, and the mutilated fœtus followed without difficulty."

I cannot see why the same thing could not have happened without recourse to the knife. There was no embarrassment in the birth of all that part of the two bodies already out of the pelvic cavity, and the difficulty was in the delivery of the heads; therefore, if they were of sufficient size to pass the brim after the mutilation, they could also have crossed it before by appropriate manipulation. In my trial the same thing occurred after the second foot of the second child came out, for then the two bodies passed through the pelvis parallel to each other, driven by the natural powers, as far as the thorax. I noticed the screw-movement they performed in their egress, and this inspired me to turn the bodies over the abdomen of the mother.

These two diagrams[3] represent what I believe happened in my case. After the birth of the bodies as far as the thorax, the two heads (A, B, Fig. 1) squeezed together, with a combined transverse diameter of nearly

Fig. 1.

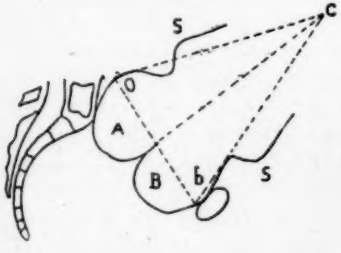
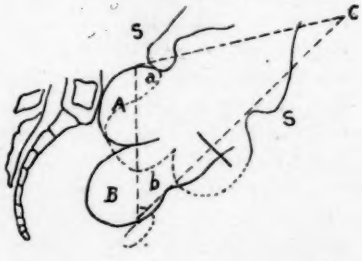


Fig. 2.



seven inches ($3\frac{1}{4}$ and $3\frac{1}{2}$), could not, of course, pass the brim. In Fig. 2 it is seen that the head (B) of the posterior child was somewhat displaced by (A) that of the anterior body, and become well advanced in the pelvis, the angle *a* gradually becoming more and more obtuse as the other

[1] De Monstrum Animalium Duplicitate.

[2] Archives Générales de Médecine, 1847.

[3] Taken from the Edinburgh Medical Journal, January, 1888, and modified by the author to adapt them to this case.

head (A) advanced, while the angle *b* became more acute, and finally (B) emerged from the vulvar orifice immediately followed by the head of the anterior child.

In class B of the division of Playfair—that is, when the children are united back to back by the sacrum—the labor is easier than in class A, because the two bodies are so joined that it is not necessary they should be born parallel to each other when the head presents. In podalic presentation the mechanism of delivery is the same as in class A. To this type belongs the famous Hungarian sisters, Judith and Hélène, who lived to the age of twenty-two years (1701–1723). Hélène preceded, with presentation of the head, and was delivered as far as the umbilicus; after three hours the breech first and the legs afterward descended, and then Judith was born, her feet coming out foremost. To the same kind of *pygopagus* appertain also the celebrated sisters, Millie and Christina, known as the "two-headed nightingale," two dark mulattoes born in North Carolina in 1851, and still living, and the more recent case of the Bohemian twins, Rosalie and Josepha.

Double monsters of class C, in which there is a single body with two heads, are delivered very much like those of class A. "If the head presents," says Playfair, "and the nature of the monstrosity can be recognized, turning should be resorted to, and the feet of both children brought down into the pelvis." When by appropriate manipulation the heads cannot be made to pass the pelvic cavity, decapitation of one of them may be performed, since from their anatomical peculiarities it is extremely rare that such a monster could live. Two indisputable instances only, out of a large number of this kind of births, are recorded: Rita-Christina, who was born in Sardinia, March 3, 1829, and died in Paris November 23 of the same year, had two heads, two necks, and four arms, but a single body from the waist down; the other case is mentioned by Buchanan in his *History of Scotland* (1582), in which he says the monster was born in that country in the fifteenth century, received a liberal education at the expense of King James III., and lived to the age of twenty-eight years.

The most uncommon of all are the double monsters of class D, in which the heads are more or less fused together, and the rest of the two bodies entirely separate. Playfair says he could find the description of their delivery in only two instances: one gave rise to great difficulty, and in the other the labor was easy. Craniotomy or perforation should be performed when it is impossible to deliver the voluminous compound-headed monstrosity (*craniopagus*). Veit refers to a case in which the two children (*girls*) were united at the foreheads, and lived until they were ten years old. When the vertex of one head is merged with that of the other, the double monster is called a *metopagus*, and the mechanism of delivery offers no difficulty if the heads are of normal size.

My case is a true *thoracopagus tetrabrachius*, or, according to the classification proposed by Fisher, an *omphalopagus thoraco-symmetros*, and resembles very much the case of Dr. Henry O. Marcy, of Boston.[1]

In conformity with the authorities consulted, I find that the four practical deductions in the management of all cases of double monsters formed by the union of two bodies at the thorax or abdomen are the following:

1. The less interference with Nature's efforts the better.

2. If the heads present, and the monstrosity can be diagnosticated in time, turning should be resorted to, and the feet of both children brought down into the pelvis.

3. In podalic presentation the bodies can generally be extracted without much difficulty by direct traction, until the shoulders and four arms are reached. In doing this the backs of the fœtuses, if not already placed in the oblique diameter by spontaneous evolution, should be made to assume that position, and the bodies then turned over the abdomen of the mother, so as to cause the posterior head to pass first into the cavity of the pelvis.

4. In vertex presentation, if the diagnosis cannot be made out, the body corresponding to the first-born head may be expelled by the natural powers, or the second head may be born with its occiput fitting into the cavity formed by the neck of the first child. If neither of these two manners of delivery takes place, and turning cannot be performed, craniotomy or decapitation will be required.

CLINICAL ILLUSTRATIONS OF REFLEX OCULAR NEUROSES.

By George M. Gould, M.D.,
chief of the ophthalmic clinic of the german hospital, philadelphia.

I. Stammering due to Hyperopia.

H. C., a lad of eleven years of age, was sent to me on May 4th, by Dr. Jarrett, of Camden, N. J. He had alternate convergent strabismus, and for about five years he had suffered from persistent headache. He was very thin and nervous, but no definite disease or hereditary taint was to be found. During the examination I was struck by his inability to speak without very painful and continuous stammering. Nearly every word was attended with grimaces, and pronounced only after repeated efforts. I thought no more of this until three days later, when the mother surprised me by saying that since she had been putting the "drops" in his eyes he had stuttered but very little. A similar remark in reference to headache is probably a daily experience of oculists—a fact that might be more often utilized by the general practitioner to

[1] Boston Medical and Surgical Journal, July 13, 1871.

differentiate headache due to eye-strain from that due to other causes. A mydriatic might often quickly settle the question.

I prescribed spectacles correcting his hyperopia of 1.50 D., and three weeks afterward I saw the boy again. The strabismus had disappeared, though returning the instant his glasses were removed. His headaches had vanished, and of his stammering there was hardly a trace. At this date (August 31st) there has been no resumption of the headaches, and he is much fleshier and more healthy. His mother tells me that unless very tired or very excited he seldom stammers. He was very willing to talk at this visit; and during a half-hour's conversation there were but few slight haltings or breaks, though he was, of course, under some excitement, especially before Professor Da Costa, who also examined him. His mother says, unsolicited, that his "temper" is much improved. I learn from her that the stammering had existed for four years.

II. Peculiar Paralysis, Anæsthesia, etc., from Eye-strain.

Miss M. W., aged fourteen, was sent to me April 20th, by Dr. Jarrett. Her symptoms were so numerous and strange that I, at first, thought of hysteria, though much inquiry and subsequent events showed me this would have been a very bad diagnosis. The principal complaint seemed to be of "blind spells," occurring several times a week and lasting from one-half to one hour. During the paroxysm there was frequently violent emesis, particularly if she tried to open her eyes or look at anything. Headache preceded the paroxysms, gradually becoming more severe until ending in the climax, after which there was a brief period of one day or two of comparative comfort before the headache returned and the vicious cycle was repeated. This had been going on for five years, the paroxysms of late growing more frequent and lasting longer. With the on-coming headache the lids drooped and a "black spot" appeared before the eyes. This was soon followed by a strange numbness and deadness together with a loss of power and control of the feet, arms, hands, and face; but the loss was greatest in the tongue and mouth. At the height of the "blind spell" the insensibility and paralysis were also at a climax in one or more of the parts mentioned, and there was loss of the power of speech, or at least of articulate speech. Loss of appetite was noticed with the increasing headache, and, as I have said, nausea and vomiting might take place during the crisis. Memory had long become so poor that attendance at school was useless. The ocular examination showed a high degree of hyperopia with slight astigmatism, but without any insufficiency. I do not doubt that had the case been that of a boy, the external recti would have weakened and strabismus would have given relief.

I prescribed correcting spectacles and ordered a discontinuance of all medical treatment, and saw her again two months later. She had had but one blind spell since getting her glasses, and this was at the period of her first menstruation, a profuse and extended one that came on the second month after wearing the glasses and after the paroxysms had ceased. There had been but few and slight headaches, there was a good and regular appetite, she looked healthy, and was happy at the relief from her many previous ills. I can hardly doubt that the eye-strain had also served to retard the beginning of the menstrual life.

On September 2d, the state of affairs remained the same. There had been no further troubles of the kind described, except once a slight temporary paralysis of one arm—without a blind spell, however.

III. Chorea of Two Years' Duration due to Hyperopic Astigmatism.

B. R., a girl of eleven, by the advice of Dr. O. P. Rex, consulted me on April 5th. "Batting the eyes" and twitching of the facial muscles began two years before, and during the next year the arms and hands began to clutch and jerk convulsively. The lower extremities had not been implicated. Of late the motions of the hands had been somewhat less troublesome, but coincidently with this she commenced the habit of uttering peculiar "crowing" noises and talking a great deal in a strange and incoherent manner. From the description I thought this phenomenon might have been appropriately called chorea of the voice. In the past six months headaches have been growing constantly more severe, and my notes tell of pains in the back and legs, fits of vomiting, loss of appetite, and tinnitus aurium. There was on the part of the mother great complaint of irritability and "quarrelsomeness." She had been treated at two of our best hospitals for the "St. Vitus dance," but without any improvement. I found an hyperopia of two dioptres in each eye and an astigmatism of one, and at once prescribed spectacles, ordering at the same time a complete discontinuance of medical treatment.

On August 27th, she and her friends reported that all the symptoms I have described vanished very shortly after she began wearing the glasses. There had not been, for several months, any sign of chorea; there had been no gastric trouble or vomiting, no headache, no involuntary crowing or talking noises, etc. The disposition was normal, she had a good appetite, and excellent health. The case had slipped my mind. She had come to me to see about her broken glasses. She had been without her spectacles for two days. Within twenty hours after the accident her eyelids began "blinking and twitching," and it was plainly evident that the blepharospasm was fast extending to the facial muscles. I, of course, hurried her to the optician, with the conviction strong in my mind that the typical chorea would have returned within a short time.

In many respects this case recalls another that I reported previously,[1] in which the lower extremity was involved, and the malady of longer standing. The spasmodic activity of the right hand and foot was continuous and severe, and, uninfluenced by the highest scientific treatment, had persisted for two or three years. It disappeared wholly and almost immediately with the wearing of spectacles correcting her ametropia, the arsenic treatment having, by order, been discontinued the day she got her glasses. The cure is complete up till now.

Since that report I have had several cases of more or less severe tic of the face, implicating one or several muscles of the cheek and mouth, quickly disappearing with relief of eye-strain. I have also had two cases of great restlessness and generalized nervous activity, seemingly not very different from chorea in essential character, that were relieved in the same way. It does not seem illogical to suppose a generalized or

[1] Medical and Surgical Reporter, February 9, 1889.

diffused outlet for abnormal nervous discharge instead of specialized or particular routes.

I may also refer to a case of what I have ventured to call "chorea of the heart," reported in the same communication.[1] The intense and long-continued palpitation came on during enormous eye-strain, and persisted despite all medical treatment until the ametropia was corrected, when the heart's action became normal at once, and the seriously endangered life was saved.

IV. Functional Gastric Disturbances of Ocular Origin.

In the paper above referred to, I have given the details of a case of flatulent dyspepsia of a distressing kind, of twenty years' standing, cured by spectacles. Owing to the long duration of the fearful ailment, the misery it had caused, its obstinacy to all other methods of treatment, the literal instantaneousness of the cure, and the proved certainty that the cure was due to the means designated, this case is quite unique and noteworthy. I have since made it a routine part of my examinations to inquire as to the possible existence of functional digestive derangements in all cases of eye-strain. As a result, I have found that in the young of either sex (but more usually in girls), and in women, where eye-strain of any considerable degree exists, the normal action of the stomach and digestive system is very frequently interfered with, and often to a great extent. I think the reason this has not been recognized and accepted by the profession is that an almost universal belief that no such causal relation can exist, has hitherto prevented proper inquiry.

It is a matter of the commonest observation that digestion is controlled by nervous action and profoundly influenced by emotional states. The old fallacy that the sympathetic system was a "lesser brain," distinct from and unallied with the greater brain, still exercises an unconscious but baneful influence. The two, in fact and in function, are united; and there is nothing illogical in the supposition that a derouted reflex from an irritational strain might travel toward the stomach, or inhibit other currents thither. But, even if apparently illogical, it is a fact.

My experience, as I have said, has been such as to prove that headaches and other reflex ocular neuroses are mostly confined to women and the young. I have elsewhere[2] attempted an explanation of the fact

[1] Ibid.

[2] Medical and Surgical Reporter, March, 1889. The essence of my thought is that in girls and women the irritational eye-strain reflex that normally or physiologically would return eyeward, is inhibited, with the result that headaches follow; or is derouted to other organs that suffer vicariously. The reason of this inhibition, overflow, or deroutation is to be looked for in sexual selection, clear and healthy eyes being of the highest importance in influencing sexual choice through beauty. Hence the corollary that the smallest amount of ametropia in women should be corrected, an amount that in men

that men usually escape such reflexes. Similar reasons might obtain as to their freedom, comparatively speaking, from the gastric reflexes. However this may be, I have found clinically that headache usually precedes, and is usually continuous with, the gastric trouble. This last commonly consists first in an unaccountable loss or fickleness of appetite. As the irritation has created an abnormal amount of nervous energy, nature seeks an equipoise by lessening the production at the point of origin. The mechanism might be not inaptly likened to the action of the governor of a steam-engine—the greater the speed the more the steam is shut off below. An analogous but reverse process physiologically is the automatic mechanism whereby deoxygenated blood, by its action upon the centres of respiration and cardiac inhibition, quickens the action of the heart and lungs. With failing nutrition there is general diminution of vitality, a growing languor and malaise. The irritation continuing, the anorexia proceeds to fits of nausea, and even vomiting, ending finally in one of the many forms of chronic dyspepsia, or "sick headache." The physician has been appealed to, and long courses of dieting, artificial foods, bitters, mineral acids, or tonics, have been tried in vain. Doubtless every physician vividly remembers a number of such puzzling cases.

One such is very fresh in my mind, though I can only infer, not prove it to have been of this nature:

Mrs. M., who, up to four years ago, had enjoyed perfect health, was attacked with violent gastritis. Nothing could account for it, and no treatment influenced it. All that money and science could apparently do was tried, and two years of wretchedness followed, until, as she said, it finally "wore itself out." There was no ocular pain or trouble, and, owing to her perfect nervous organization, physique, and resistance, there had been comparatively little headache. I found an hyperopia of three dioptres—that, I believe, explains the gastritis; but I also found what I infer was the explanation of the fact that the gastritis "slowly wore itself out." This was an insufficiency of the external recti muscles of twelve degrees. I am fully aware of the danger of this manner of reasoning, but I cannot escape the conclusion that the excessive innervation and hypertrophy of the interni had by convergence thrown one eye out of function, and, in a way readily understood, thus in great part relieved the eye-strain.

So far, now, as concerns the more typical and conclusive cases of gastric affections of ocular origin, the general symptoms enumerated are so closely exemplified by the majority of cases that specific detail is unnecessary. I now have notes of sixteen cases that have not reported if they have experienced relief; but I have the most positive and unqualified assurances from twenty-eight others that their loss of appetite, dyspepsia, nausea, etc., more or less speedily disappeared soon after getting their glasses. An example comes in as I write:

could be safely ignored. According to the fineness or delicacy of nervous organization and the preponderating quality of sexual instincts will eye-strain be disastrous to the general health.

Miss M. M., a thin, nervous little lady, came to me two months ago with a history of five years of headache, latterly continuous every day, and the confession that she ate no breakfast, and often no supper. She weighed at that time 103 pounds. She now has no headache unless she leaves the glasses off a few hours, eats three meals every day, and weighs 112 pounds. Her ametropia was only one-fourth of one dioptre of astigmatism.

I have had four cases of complete failure to influence gastric derangements for the better among my patients, but of these the time of trial has been but brief in two. Sick-headache I believe to be most frequently of ocular origin, though, when of long standing, not perhaps curable by relief of the eye-strain.

V. Aphonia, with other Nervous Symptoms, due to Compound Hyperopic Astigmatism and Insufficiency.

Miss A. U. has for the past seven years been subject to unaccountable attacks of loss of voice. These occurred with no regularity, and the duration of the periods of aphonia was also irregular. For five years the attacks came on every few days, though sometimes she would have none for two or three weeks. They always lasted, at least, for several days, and at one time she was without her voice for eight weeks. The application of the galvanic current by her physician had several times seemed efficacious in bringing the voice back. About a year ago she got a pair of spectacles and for a year, while wearing them, she had no loss of voice. Latterly, the attacks have returned. Since wearing the glasses she has had severe "cramps in the eyes"—blepharospasm—which have grown worse until, coincident with a severe seizure, came also the old-time loss of voice. During this long period of seven years, except in part relieved while wearing the glasses the past year, there have also been attacks of sick-headache every few weeks, and great gastric derangement consisting in loss of appetite, dyspepsia, "rattling of the stomach," and swelling of the same. Has consulted several physicians for this, without relief. Latterly, there have been added numbness and paresis of the right side of the body at intervals, alternating with choreic jerkings of the right hand and foot, insomnia, nervousness, etc. When she applied to me it was impossible for her to utter a vocal sound. I at once used a mydriatic to refract her, and was surprised to find that her voice almost entirely returned within the hour she was at my office. I found the spectacles she had been wearing gave a partial correction of her hyperopia, but left her astigmatism and insufficiency without relief. Her refraction was as follows:

$$\text{O. D. } \frac{5}{cc} + \text{Sph. 2.75 D.} \bigcirc + \text{Cyl. 1.75 D. Ax. } 50° = \frac{20}{xxx}.$$

$$\text{O. S. } \frac{20}{c} + \text{Sph. 1.25 D.} \bigcirc + \text{Cyl. 0.62 D. Ax. } 180° = \frac{20}{xx}.$$

The external recti also showed an insufficiency of 8°. I at once prescribed proper lenses, and since wearing them three months there has been no loss of voice. It is true that the period is short, but coupled with the history of the case and the fact that during these months there have been no sick headaches, no vomiting, no chorea, no insomnia, no blepharospasm, no numbness or paresis, etc., I think the proof conclusive

that the source of the peripheral reflex irritation was the eyes. There are still some pain and sensitiveness about the eyes, and slight frontal headaches. Hysteria is wholly out of the question.

VI. Sundry Neuroses.

A passing allusion to *headache* is all that is necessary. This, *par excellence*, is the commonest of all mischiefs traceable to eye-strain. Out of over five hundred private cases of eye disease treated in the past year, I find I have noted headache as a complaint in three hundred and twelve. Of those subsequently reporting, out of this class, by far the greater number state a complete cessation of the malady. Only a few have declared themselves but partially benefited, and not entirely relieved, whilst the absolute failures number five.

I have had two cases of *dizziness* and *vertigo* as among the principal complaints, and complete relief followed ocular treatment.

I cannot forbear a mention of the deleterious effects sometimes due to eye-strain, upon the emotions and disposition—even upon the character and life. I have already described[1] several instances in which the *psychological influence of errors of refraction* in the young was inferable or evident:

> "The most frequent method in which eye-strain acts disastrously upon the developing personality is in making study and literary labor so irksome that the mind is slowly but irrevocably turned from intellectual pursuits, and directed to physical activities for outlets of its energy."

In the cases first described in the present paper, the effects of ocular irritation in producing irritability of temper, impatience, lack of self-control, etc., were very evident to the parents and friends of the patients. These influences cannot be overestimated when we think of our school system; our high-pressure civilization; the suddenness of the strain, since the invention of printing, thrown at once upon the naturally hyperopic eye; the interblending of ocular functions with every act, physical and psychical; and the fact that the enormous load is thrown upon the young organism just at its most plastic and formative period.

From the above brief review of a year's "Clinical Illustrations of Reflex Ocular Neuroses," it might to some seem either that I have adapted facts to fit a preconceived theory based largely upon imagination, or that my experience has been altogether exceptional. In reply I would say that my patients can be seen if necessary; that there exists in medical literature a much larger mass of similar examples than is generally known; that if carefully sought for, like results may be found to compel like inferences by other patient investigators; and, lastly, that the bias of prejudice is quite as harmful to scientific progress as the bias of enthusiasm.

119 South Seventeenth St., Philadelphia.

[1] Medical and Surgical Reporter, Sept. 29, 1888.

REVIEWS.

A CLINICAL ATLAS OF VENEREAL AND SKIN DISEASES, INCLUDING DIAGNOSIS, PROGNOSIS, AND TREATMENT. By ROBERT W. TAYLOR, A.M., M.D., Surgeon to Charity Hospital, New York, and to the Department of Venereal and Skin Diseases of the New York Hospital, etc. Illustrated with One Hundred and Ninety-two Figures, many of them Life-size, on Fifty-eight Beautifully Colored Plates; also many large and carefully executed Engravings through the Text. Part VII. and Part VIII.: Diseases of the Skin. Philadelphia, Lea Brothers & Co.

THE final parts of this work, just issued from the press, are worthy to conclude the series. In its now completed form this Atlas unquestionably supplies not merely a trustworthy treatise on cutaneous medicine, but a portraiture of many of its important subjects by the aid of colored plates which surpass the advantages of many of even the best illustrated text-books.

As with some of the earlier parts, these last display distinct differences in the value of their plates. The famous Baretta, who has lately brought his method to such perfection that he accurately reproduces vesicles and bullæ in wax, could scarcely do better work than that seen in Plate XLVIII., Fig. 1 (illustrating miliaria crystallina); and, in the case of a somewhat rarer affection, Plate XLIX., Fig. 2 (exhibiting to the eye some of the lesions induced by the ingestion of the bromide of potassium), even if less artistically graphic, has a large clinical value in its suggestiveness. But then, as in some of the other parts, here are also plates which were originally poor and are not better for reproduction, as, for example, the portrait of sycosis originally done by the hand of a German and which might have been executed less coarsely, and given a truer impression of the disease, if it had been carved in wood by a skilful hand.

The portraits of scabies here given, familiar of old to the dermatologist and student, still teach the uninformed how the manual symptoms of "the itch" are declared. When shall we have an illustrator of sufficient daring to show the simple-minded in diseases of this class, how the axillæ look when similarly infested, when the genital region is involved, and the hands exhibit few, insignificant, or no features of the disease?

It has been already shown in the pages of this journal that on many themes the original contributions of the author to the pages of this Atlas have surpassed in value his borrowed illustrations; and it should be added that among the latter his own portraits are conspicuously valuable and original. In none of these can he have a juster pride than in his truly admirable representations in color and by the aid of woodcuts of lichen planus and lichen ruber (Plates LIII. and LIV., and Cuts 63 to 66).

These are not equalled by those published elsewhere, and actually supply the best portraits of the diseases named yet given to the scientific world. They are accompanied by a carefully written description of the maladies based upon a painstaking study of the evolution of the clinical symptoms exhibited in patients under the author's observation and upon a discriminating recognition of the several phases of these rare and odd lichenoid skin symptoms. One may write "lichenoid skin symptoms" advisedly, for it is now almost needful to look at a rare affection of any portion of the human body from the distant points of view afforded by two continents before pronouncing definitely upon its nature. Dr. Taylor poses unreservedly for the American view, of which it may be said that he and Dr. Robinson, of New York, are the chief exponents, in declaring that "lichen planus and lichen ruber . . . are entirely distinct from one another; no relation whatever between them has ever been shown to exist, nor are there any cases on record in which they have been present on the same patient at one time, nor have they ever been known to alternate with each other in occurrence." He considers that lichen planus is pathologically an inflammatory process involving the rete and "upper part of the dorsum (?)" with cell infiltration; while lichen ruber is explained by the occurrence of epidermal hypertrophy and inflammatory exudation involving the corium.

All this may be exactly true, but one has need to remember not only that the statement is not as yet received as exact by a large number of scientific men on the continent of Europe recognized as having ability and experience, but also that the number of cases of lichen ruber seen by all observers is as yet relatively small—as also the not unimportant consideration that Kaposi himself at the late Congress of Dermatologists and Syphilographers, in Paris, publicly declared that he had actually observed typical lesions of these alleged different disorders on the person of one patient at one and at different times. Even a very few observations of this sort would at least tend to weaken the force of our author's denial of relationship between the symptoms grouped under these two names, and justify such a phrase as lichenoid symptoms. Surely the vesicular and sclerous pictures of eczema more widely differ than do the portraits of lichen planus and lichen ruber given by our author; and even pathologists will agree that an involvement of the epidermis at one date may at another be succeeded by an infiltration of the deeper tissues of the corium.

But Dr. Taylor's original and forcible setting forth of all the facts in this connection is wholly praiseworthy and excellent. On this alone, even if one had no consideration of his equally original and careful study of fibroma of the skin—(here, alas! catalogued under its ancient and misleading title of "molluscum fibrosum"!), Dr Taylor might well rest the deserved reputation of his fine Atlas. It is a credit to him and to his publishers, who seem to have spared no expense in making its pages as handsome as those of the *editions de luxe* of my lady's drawing-room.

The work is heartily commended to the practitioner and student as an exceedingly valuable means of acquiring a practical knowledge of the important subjects illustrated. J. N. H.

CONTRIBUTIONS TO THE SURGERY OF THE SPINAL CORD. By WILLIAM THORBURN, B.S., B.Sc., M.D. 8vo. pp. 230. Philadelphia: P. Blakiston, Son & Co., 1889.

THIS treatise is an extension of the various disconnected papers that Mr. Thorburn has published upon this subject, with a great deal of additional original material. The first five chapters of the book are taken up with a description of cases arranged upon an anatomical basis, and constitute a very valuable addition to our information as to spinal localization, and as to the connection between motor and sensory symptoms and the seat of the lesions which produce them. It cannot fail to be of great aid to the surgeon who may meditate operative interference with the spinal cord or canal, and will in many instances enable him to approach the seat of operation with much more certainty than at any time hitherto.

Chapter VI. takes up the indications for operative treatment in affections of the spinal cord. There is an excellent review of the histories of the operations for traumatic lesions which have been recorded, and the details are given of five cases which have come under the author's recent observation, in which trephining of the spinal canal was performed. He gives a table of fifty-six other cases, which include all that he has been able to collect. As regards operation he asks the following questions:

First. Are spinal injuries curable without operation? In regard to this, he concludes that in a small percentage of cases, in which the symptoms indicate only a partial transverse lesion of the nervous structures, recovery may begin shortly and progress steadily. In these cases we do not require, and, therefore, should not practise, an operation. In all others—in cases in which the transverse lesion is complete, in which, although it be partial only, there are no signs of improvement within a week or two, or in which improvement, after having gone on steadily for a time, comes to a standstill—recovery will not ensue. For these cases he concludes trephining might be practised in the absence of any other means of relief.

Second. Is the operation itself necessarily fatal or so dangerous as to be unjustifiable? To this he replies that necessarily fatal it obviously is not, and under other conditions it does not appear to be a very dangerous procedure. Of the total of 61 cases which he has recorded, only 35 died, or 57 per cent. Gurlt has recorded 217 deaths out of a total of 270 fractures; that is, about 87 per cent. The proportion of deaths after operation, even as he gives it, is certainly not to be regarded as a very powerful deterring influence in this very serious class of injuries, but, as a matter of fact, all deductions drawn from tables which, like this one of Mr. Thorburn's, include all recorded cases, going back to pre-antiseptic and even pre-anæsthetic eras, are practically useless at the present day. Exclusive of the cases recorded by Mr. Thorburn himself, it is safe to say that there are not more than about 13 cases of trephining or resection of the spine for fracture, which should be considered as offering material for sound deduction. These 13 cases show the following results: Three complete recoveries, two recoveries from the operation with benefit, seven recoveries unimproved, and one death. It becomes evident, when this fact is borne in mind, that the

average of 57 per cent. mentioned by Mr. Thorburn, is far beyond any death-rate which should be expected at the present day.

Third. If successful, is it likely to leave the vertebral column in a condition too weak to perform its function? In no single instance in which the results of operations have been recorded, was such a consequence observed, so that this question may immediately and finally be answered in the negative.

Fourth. Does the operation hold out any prospects of recovery in all or any cases? and if the latter, in what cases? His remarks in answer to this question may be summed up as follows: The operation for trephining the spine for traumatic lesions, as compared with the condition which it is intended to relieve, does not present any great dangers, and appears unlikely to increase the gravity of the prognosis, but as both *a priori* argument and the results of published cases show that it is unlikely to be of service, it should be abandoned, except in cases of injury to the cauda equina; in the latter, on the other hand, it will probably prove to be an eminently justifiable and serviceable procedure.

He recognizes the fact that the evidence seems to be, as regards caries, thoroughly conclusive, that the cause of paralysis in Pott's disease is not, as a rule, a transverse myelitis or a hopeless degeneration, and is not due to the pressure of the carious or displaced vertebræ, but is, in the majority of cases, the result of an external pachymeningitis which results in the formation of an extra-dural connective tissue tumor. He makes the obvious statement that we can only hope for good results if in trephining in these cases we freely remove the thickened perimeningeal connective tissue, but calls attention to the fact that paralysis secondary to spinal caries has, even when of long duration, a remarkable tendency to recovery if the recumbent position be rigorously maintained. While this is doubtless correct, its too liberal acceptance would tend to prevent operations in this most promising class of cases. Mr. Macewen's results show what can be gained with patients in apparently hopeless conditions, but should not be regarded as warranting undue delay. General failure of nutrition, or the development of bedsores, should, in our opinion, be accepted as distinct indications for operative interference, and it seems probable that in the future, in all cases of paralysis from spinal caries, we should, after (1) evacuating pus whenever it is accessible, and (2) having treated the patient by the extension process with a plaster jacket, proceed at once to a resection if these methods prove unsuccessful.

Having thus considered caries, fractures, and luxations, Mr. Thorburn adds, under the head of "Other Pressure Lesions," that as it has been proved that the operation of trephining falls within the range of practical surgery, and that chronic pressure lesions of the cord are, even after long duration, susceptible of very great, if not, in some instances, perfect, recovery, it follows that the operation is practicable and advisable in any such disease in which the source of pressure is accessible for removal, and is not amenable to other methods of treatment.

In the succeeding chapters he considers the ophthalmoscopic changes connected with injuries of the spinal cord, and with traumatic neuroses, adding some original observations of his own; and in the final chapter, under the head of "traumatic hysteria," the various conditions which have been known in acute cases, under the name of "shock," or "collapse," or "acute hysteria," and in chronic cases under the title of "neurasthenia" or "chronic hysteria." This arrangement, as he says himself,

is somewhat arbitrary, but it is also, as he claims, useful for the purposes of reference and of description. He defines traumatic hysteria as a functional affection of the nervous system resulting from an injury, due probably to a change localized in some portion of the cerebral cortex, and manifested by correspondingly well-defined and localized symptoms. Or, he adds, we may say that it has no known organic basis, that it is not reflex in origin, and that it is neither shock nor neurasthenia.

While we cannot endorse some of Mr. Thorburn's conclusions, notably those as to non-interference in traumatic lesions, and believe that a careful study of the cases contained in his tables will show that those conclusions are not fully warranted by the premises, we can yet cordially congratulate him upon the character of the work as a whole. It shows not only research and industry, but also marked power of careful and painstaking clinical observation, and is written in an agreeable and unaffected style. We will look with pleasure for Mr. Thorburn's further contributions to surgical literature. J. W. W.

DISEASES OF THE EYE. A PRACTICAL TREATISE FOR STUDENTS OF OPHTHALMOLOGY. By GEORGE A. BERRY, M.B., F.R.C.S. Ed., Ophthalmic Surgeon, Edinburgh Royal Infirmary; Senior Surgeon, Edinburgh Eye Dispensary; Lecturer on Ophthalmology, Royal College of Surgeons, Edinburgh. With colored illustrations from original drawings. 8vo., pp. xvii., 670. Edinburgh and London: Young J. Pentland, 1889.

THE SAME. Philadelphia: Lea Brothers & Co., 1889.

THE previous work of this author in his chosen field of ophthalmology causes one familiar with it to take up his present systematic treatise with a good deal more interest than the simple addition of one or more to the many books on the subject already extant can commonly awaken. And such an interest will not fail of gratification and justification in a careful reading of this book.

On looking over the work, one is first struck with the excellent way in which the printer has done his part, and particularly with the colored illustrations, of which there are some fifty or sixty interspersed throughout the text. These are all new, representing sketches made especially for this work by Dr. J. Tatham Thompson, of Cardiff. They are nearly all of them excellent, some revealing high artistic skill, and they have been admirably reproduced.

The plan of the work divides it into three sections. The first, headed Diseases of the Eye, is made to include also injuries, foreign bodies, congenital anomalies, and color-blindness. The second, by what would seem rather a reversal of the natural order, has chapters on errors of refraction and accommodation, affections of the oculo-motor muscles, and on the examination of the eye. And in the third section, consisting of a single chapter of forty pages, are described the various operations. This "bunching" of the operations saves in many cases from repetition and cross-references; but the separation of the description of the operation from that of the condition that necessitates its performance, is not suited to

the clear presentation of slight departures from the usual form of operation to meet special indications.

Probably the peculiarity which detracts most from the value of this work is the exclusion of all reference to other books and papers. It is not that the author fails to credit the various discoveries, theories, investigations, or views to their originators; they are named with almost excessive frequency, but only the name of the individual is given, without any indication as to where his publication on the subject is to be found. Now, one does not often buy a book solely or chiefly for the references it contains, and worthless or injudicious references, introduced for display, are the height of vanity and vexation of spirit. Then, too, the labor of verifying references and securing their accuracy is immense, and not likely to be appreciated by the general reader. Still, if one becomes interested in a subject, he is not likely to be entirely satisfied by the paragraph given to it by any single writer in a general text-book, but will finish the passage with a whetted appetite for other men's views of the matter. And, in that case, one or two good references to papers that in turn refer the reader to others, may open up to him the whole literature of the subject. Valuable as are the recently issued medical indexes and catalogues, they are yet far from that state of perfection that would render obsolete the appended references or condensed bibliography that may well accompany every good chapter or monograph.

Mr. Berry's work does not need to exclude references to give it an appearance of originality. Every part of it shows that the common stock of professional knowledge has, in its author's mind, undergone a process of digestion and assimilation that fully justifies him in laying it before us again in the form of a new book. - On this account, there is more of interest in it to the ophthalmic surgeon than in any other work in the language that has appeared for a number of years.

This treatise, while in most respects fully deserving the adjective practical, can hardly be regarded as meriting it for some of the parts dealing with physiological optics. The allotment of relative space here is very far from corresponding with the practical importance of the various subjects, though any one who enjoys a nice mathematical demonstration, with the aid of well-chosen and well-printed diagrams, can easily forgive such a lapse. Quite noticeable, though of really slight importance, are the few very obscure and imperfect sentences, indicating a lack of proper revision, and the incorrect page headings, which may also be regarded as an evidence of haste. But in general the literary execution is excellent, and the number of typographical errors that have escaped the proof-reader is extremely small.

The work is particularly strong in the direction of the subjective symptoms of visual derangement, and the diseases of which they are the most important manifestations. It is, however, no longer a fair reflection of the best light we have on the subject to separate toxic central amblyopia from retro-bulbar neuritis and regard it as probably due to some quite different pathological condition. But all subjects treated are taken up in a fresh, original way, which will be found interesting and suggestive by the oldest student of ophthalmology. For example, take this opening passage of the chapter on Diseases of the Cornea:

"The corneal tissue may be the site of inflammatory products, deriving their origin from a focus of imflammation which is situated either in the cornea itself, or in some part of the eye. In the first case we may talk

of a *primary* or true *keratitis;* in the second there is, properly speaking, no keratitis, but merely a more or less dense, diffuse infiltration of the cornea, similar in every way to the hyperæmic and œdematous area of infiltration which surrounds a focus of inflammation in any other part of the body. The condition is one, then, of secondary diffuse infiltration of the cornea, secondary as distinguished from a similar infiltration surrounding a primary inflammation of the cornea; or, shortly, *secondary keratitis,* if it be remembered that the secondary refers to the focus of inflammation being elsewhere, and not to the time at which the corneal changes become manifested."

In conclusion, we congratulate the author and the profession that this book brings them into relations that promise to be advantageous to both. E. J.

LAVORI DEI CONGRESSI DI MEDICINA INTERNA. PRIMO CONGRESSO TENUTO IN ROMA NELL'OTTOBRE, 1888. Pubblicazione fatta per mandato del Comitato Ordinatore dal PROF. EDOARDO MARAGLIANO, Ordinario di Clinica Medica nella R. Università di Genova.

TRANSACTIONS OF THE FIRST CONGRESS OF INTERNAL MEDICINE, HELD AT ROME IN OCTOBER, 1888. Published by order of the Committee of Arrangements, by EDOARDO MARAGLIANO, Ordinary Professor of Clinical Medicine in the Royal University of Genoa, 8vo., pp. 399.

THIS first volume of *Transactions of the Italian Society of Internal Medicine* may well serve as a model for all succeeding ones. Its contributors are, for the most part, men whose names are well known throughout the scientific medical world, and are, in several instances, identified with the subjects they have chosen to discuss. For example, Cantani contributes an elaborate paper on diabetes mellitus; Marchiafava presents a communication on malarial infection, and Tomaselli discusses at length the subject of quinine intoxication.

The first-mentioned paper is probably the most important of recent additions to the literature of diabetes mellitus. For this reason, as well as on account of its thoroughly practical character, it is selected from a number of excellent contributions, for somewhat extended notice.

According to Cantani, diabetes mellitus begins with non-combustion of a fraction of the ingested carbohydrates, the larger portion being still consumed, and hence there appears in the urine, which, as a rule, is not increased in quantity at this early stage of the affection, only the non-assimilated sugar. Gradually less and less sugar is consumed, until finally there arrives a stage when the amount excreted with the urine corresponds exactly to that ingested. It is, therefore, no real privation to eliminate hydrocarbons from the diet of a diabetic, for they serve no nutritive purpose. They act as poisons, being excreted unchanged, or nearly so, by the kidneys, and are the chief cause of the polyuria and its pernicious results.

The abuse of farinaceous and saccharine substances, leading to exhaustion of the power of the organism to assimilate and consume them, is held by Cantani to be the principal cause of diabetes, and this view is

supported by the following statement of De Renzi. In few cities, the latter affirms, is there so much meat consumed as in Genoa, while in Naples the diet of the people is largely farinaceous. In the former, diabetes is so rare a disease that it is difficult to obtain a case for clinical purposes, whereas, in Naples, it is not uncommon to have twenty or thirty cases under treatment at one time.

An absolute and prolonged repose of the exhausted function of assimilating sugar is the therapeutic inference from these views, and this object is obtained by the following regimen: an exclusive diet of animal food for at least three months, excluding fish, either fresh or dried, mollusks, eggs, soup, the viscera of animals, excluding the liver and giving preference to the pancreas, cooked ham and pancreatized animal fats, such as lard and butter; salt and sometimes pepper, black tea and coffee, both without sugar, and instead of wine rectified alcohol in carbonated water, water flavored with orange flower, mint, fennel, anise, or cinnamon; and instead of vinegar, which often contains glucose, acetic or citric acid, added to water in minute quantity. All farinaceous and saccharine foods, all fruits, milk and milk foods, cognac, rum, and green vegetables are absolutely prohibited.

The only drugs to which Cantani attributes any value in the treatment of diabetes are alkalies, and preferably in the form of alkaline lactates. Such compounds are combustible by the diabetic organism, and may, therefore, supplement, to a certain extent, the non-combustible hydrocarbons. It is largely owing to the coincident administration of alkalies that apparent success has attended the treatment of diabetes by dietetic methods less rigorous than those of Cantani. The therapeutic virtues of Carlsbad, Vichy, Vals, and Neuenahr are due to the alkaline waters of these resorts, of which the effect is heightened by change of air, scene, and absence from business cares, the *procul negotiis*.

It is an interesting fact, of which many a parallel can be found in medical literature, that the two latest writers on diabetes, Ebstein and Cantani, are agreed as to the treatment of that disease, although their views regarding its pathogenesis are diametrically opposed. Ebstein having ascertained by ingenious experiments that carbonic acid retards the combustion of sugar outside of the body, employs this fact to explain the non-combustion of sugar by the diabetic. He holds that diabetes is due to a universal alteration of the protoplasm of the body, in virtue of which it produces from a given amount of carbon-containing substances less than the normal amount of carbonic acid. This diminished production of carbonic acid is insufficient to restrain within normal limits the action of the diastatic ferment upon the glycogen contained throughout the entire organism, and especially in the liver and muscles. In consequence an excessive amount of glycogen is converted into sugar, giving rise to the glycæmia and glycosuria of diabetes. Cantani, on the other hand, admits the diminished production of carbonic acid, but considers it a result, not a cause, of the disease. Ebstein's theory does not explain the disappearance of sugar from the urine shortly before death, which occurs even though sugar be administered to the patient, without unwarrantably assuming either that the diabetic, at this stage, produces enough carbonic acid to restrain the action of the diastatic ferment within normal limits, or that this ferment is entirely wanting.

The difference between the views of Cantani and Ebstein concerning the pathogenesis of diabetes is traceable to the different opinions held by

each with reference to nutrition and tissue-change in health. Ebstein holds, with the majority of physiologists, that the ingested sugar, in health and disease, is converted into glycogen, and as such deposited in the organs and tissues. The healthy organism produces an amount of carbonic acid sufficient to restrain within combustible limits the conversion of glycogen into sugar, whereas the diabetic produces so little carbonic acid that the production of sugar is excessive, and overflows, so to speak, into the blood and urine.

On the other hand, Cantani believes in a direct combustion, without previous conversion into glycogen, of a large, perhaps the larger, portion of the ingested hydrocarbons, and recognizes in such combustion the principal source of animal heat. If, says he, we compare the quantity of sugar and urea in the urine with that of the ingested hydrocarbons and albuminates, we find them to correspond so exactly that we can regulate at will the amount of the former. This would scarcely be possible, if all the ingested hydrocarbons had first to be transformed into glycogen, and all the albuminous substances to be first appropriated by the organs and tissues. Again, if, after causing the sugar to disappear from his urine by fasting, we administer hydrocarbons to a diabetic, glycosuria will be observed two or three hours thereafter, a time too short for it to have been transformed into glycogen and again converted into sugar.

These are some of the many interesting points of this excellent paper, the eminently practical character of which is attested by the fact that the author's conclusions are based on a study of more than one thousand cases.

Marchiafava presents a short communication on malarial infection, confining his remarks to the alterations of the blood-corpuscles. He is more than ever convinced of the parasitic nature of malaria. In the debate following his paper Maragliano and Mosso call attention to the remarkable resemblance of degenerated blood-corpuscles to the forms held by Marchiafava and others to be of parasitic origin. Marchiafava replied that the resemblance is only superficial, and that a close comparison of the forms of degeneration with those of malarial poisoning brings the conviction that the two are totally distinct. The researches of Councilman and Osler have made the profession in America familiar with this subject. It is, therefore, of great interest and practical importance to bear in mind that the blood-corpuscles may undergo degenerative changes so closely resembling those of malarial infection that none but an expert could readily distinguish between them. Such changes have been observed in the blood of scarlet fever, and were erroneously attributed to the plasmodium malariæ.

Alberico Testi, of Faenza, contributes an interesting paper on the use of thymol in the treatment of typhoid fever. The properties of this substance are such as to render it the best of all known intestinal antiseptics, and the writer can confirm, from an abundant experience, all that Testi says in its favor. Its beneficial effect in typhoid fever is shown in the gradual and permanent reduction of temperature, the disappearance of meteorism, and the absence of notable nervous disturbance. That it acts as an intestinal antiseptic is proved by the diminution or disappearance of urinary ingredients, such as phenol and indican, which are known to be the result of intestinal decompositions and putrefactions. While it cannot be maintained that thymol exerts a specific action upon the Koch-Eberth bacillus, it is impossible to deny that it modifies, in a most favorable manner, the putrid intestinal processes to which the grave

symptoms of typhoid fever are so largely due. Testi concludes by expressing his belief that, in the absence of specific remedies, the administration of thymol, combined, in the gravest cases, with a rational employment of hydrotherapy, offers the best prospect of success in the treatment of typhoid fever. F. P. H.

INDEX-CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, UNITED STATES ARMY. AUTHORS AND SUBJECTS. Vol. X.: *O—Pfutsch.* 4to., pp. [10] 1052. Washington: Government Printing Office 1889.

NINE times have we directed the attention of the profession to the predecessors of this noble volume—and the words of praise and congratulation we have repeatedly and truly used, may in all verity be applied to this member of an illustrious family. With safety and with pleasure can we for the tenth time speak of the greatness of the original scheme and the ability and energy with which it has been carried on. From the prefatory report by which Dr. Billings introduces the volume to the Surgeon-General we learn that Vol. X., "O—Pfutsch," includes 7,658 author-titles representing 2,905 volumes and 7,282 pamphlets. It also includes 14,265 subject-titles of separate books and pamphlets, and 29,421 titles of articles in periodicals. Usage accustoms us to almost everything, and until we pause to think of the vast field covered by and the multiplication of titles contained in this volume, we are apt to think of it as we do of other books which express the thoughts and labors of men's lives. As we con over a page, however, and find recorded the works by which some name has become familiar to us in the literature of our science—as we note the date of its first appearance, and so generally the date which terminated all work by it, we feel that there may be much of human interest, much appealing to human sympathy, even in so gravely scientific a work as this index-catalogue.

But enough is known to the profession concerning this great work so surely, steadily, yet withal slowly approaching its completion. The mechanical necessities attending the passage of a work like this through the press forbid us to hope for its very speedy completion, desirable as such a consummation must appear to every one interested in the progress of the work. Already the progress of medicine has made many things obsolete which were approved when Dr. Billings began his great work. Thus under the large heading of "Observations," so popular a few years ago, we notice some upon the lateral operation for stone, which when the catalogue was begun fairly represented the state of our knowledge; but now, within a short time, it has become a question whether that operation will at all survive, while it is certain the coming surgeons will never have the opportunity to achieve a reputation by extended series of cases recording how often they ventured up to the bladder through the narrow portals of the perineum with the bony pillar of the ischial and pubic rami on one side and the urethral bulb on the other.

Again it is our pleasant duty to congratulate Dr. Billings and the profession to which upon so many occasions he has been both an ornament and an aid, that his *magnum opus* is progressing so steadily and so well. S. A.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,
ASSISTANT PROFESSOR OF THERAPEUTICS IN HARVARD UNIVERSITY.

Recent Hypnotics and Analgesics.

As the result of the combined work of the chemist, the pharmacologist, and the therapeutist, there have of late years been given to the profession several new and active remedies. The classes of drugs included under the hypnotics and analgesics have been largely increased, though the value of many of these novelties is still undecided.

Prof. Leech, in a discussion before the Section of Pharmacology and Therapeutics of the British Medical Association, at the meeting held last August, has made an interesting contribution to this subject, and has outlined in a most excellent manner the fields of usefulness of these remedies. His paper is limited, for the most part, to a consideration of the hypnotics connected with the fatty series. In this class, however, are contained all but three of the newer sleep-producing agents, and of these, two, hyoscine and tannate of cannabin, are only old friends with new faces, whilst the third, boldin, or boldo-glucin, has neither been thoroughly investigated nor practically employed.

The following hypnotics have been brought into use in the past seven years: urethan, acetal, methylal, sulphonal, amylhydrate, hypnone, chloralurethan, and chloralamide. The fact that hypnotics have been sought for, and so largely found, amongst combinations connected with the fatty series, is well worthy of note.

The alcoholic radicals, or alkyls, of which methyl and ethyl are familiar examples, tend to give the compounds into which they enter a power of depressing the functions of the higher cerebral centres, and of producing either sleep or that complete insensibility to external impressions known as general anæsthesia; by their further action, the motor and reflex centres are weakened, and eventually the vaso-motor and respiratory centres and the cardiac ganglia

lose their power, the nervous centres being affected in the inverse order of their development.

Very little is known as to the laws which govern the appearance of this influence in the various classes of combinations into which the alcoholic radicals enter, but it is possessed by so many of these combinations that pharmacologists have been led to search among them for those which most effectively depress the higher nervous centres without exerting a deleterious influence in other ways, and this search has led to the large addition to our sleep-producing agents shown in the list.

The halogen elements, chlorine, bromine, and iodine, have, too, a tendency to depress the functions of the higher nervous centres, but they likewise tend, more than the alkyls, to depress the functions of the lower centres which preside over respiration and circulation, and they influence the heart more markedly, weakening its action; the combination of an alkyl with chlorine, or the replacement of one or more of the molecules of hydrogen in an alkyl compound by chlorine, will in many cases augment its influence on the nervous system, but at the same time it increases its depressing effects on the circulation and respiration. By combining chloral with other groups, it has been sought in some degree to minimize these possible evils, and the last two substances in the list have been introduced with this view.

Apart from chemical structure, the physical properties of compounds influence their physiological effects; hence it is that some of the combinations into which alcoholic radicals enter are anæsthetic, some hypnotic; anæsthetics being found amongst those substances which are volatile and quickly eliminated, soporifics amongst those which have a heavy molecule, and are either liquid or soluble, so that they may be given by the mouth, and, being absorbed into the blood, may continue to act.

Of the hypnotics introduced in the past ten years, two, acetal and hypnone, have given but little promise of utility, and we have not sufficient data concerning the action of chloralurethan and chloralamide to discuss their relative merits as compared with other hypnotics.

The other newer hypnotics, urethran, methylal, amylhydrate, sulphonal, and paraldehyde, are compared with chloral and the older hypnotics; the advantages and disadvantages of each are pointed out, and the special sphere where each is indicated is suggested.

Like chloral, they possess little, if any, analgesic action; all may at times relieve pain by causing sleep, and rarely they may seem to remove pain, but none of them possesses that wonderful power of preventing pain which opium has.

It is difficult to estimate the relative hypnotic power of drugs, but the order of potency seems to be as follows: 1, sulphonal; 2, amylhydrate; 3, paraldehyde; 4, urethan; 5, methylal; none of these drugs equals chloral in the certainty of its effects. It seems probable that a dose of sulphonal has, as a rule, about the same soporific action as three-fourths of its weight of chloral; and von Mering is of opinion that half a drachm of amylhydrate has the same power as fifteen grains of chloral, or forty-five minims of paraldehyde.

The time in which sleep is brought on will vary much, according to the condition of the stomach at the time of administration; but it depends, too, on the readiness with which they can be absorbed. Urethan, being soluble

and non-irritating, is most rapid in its action; a tendency to sleep is often noticed a few minutes after administration. Paraldehyde and amylhydrate are also rapid in their effects, but sulphonal, more than chloral or any other drug, is slow in producing its effects, and two or three hours not infrequently elapse before they are apparent, though at times sleep follows in from one-half to three-quarters of an hour.

The duration of the action of these drugs depends partly on the potency of their cerebral influence, partly on the rapidity of excretion. On the latter account, the hypnotic effects of urethan most quickly pass away; and if the tendency to sleep, soon after its exhibition, be counteracted, its influence is not again observed. Methylal, too, is very quickly eliminated. The other new hypnotics, when given in sufficient doses, seem to produce, like chloral, a sleep of five to seven hours.

After a dose of chloral, a patient is occasionally sleepy during the following morning, and the influence of the drug is sometimes noted on the second night after its administration: this prolonged deferred action is more marked and frequent after sulphonal than after chloral or any other hypnotic; indeed, it is one of the chief objections to the use of sulphonal, and it cannot always be prevented by giving the drug some hours before bedtime. In the weaker hypnotics this deferred action is rarely seen. As regards the possible dangers of these hypnotics: of chloral, a larger dose than twenty grains is capable of producing a fatal result; sulphonal, even in huge doses, has never produced death, though thirty grains caused cyanosis and a semicomatose condition in a patient suffering from arterio-sclerosis. Paraldehyde and urethan seem quite devoid of danger; concerning amylhydrate and methylal we know too little to speak with certainty, but there is reason for believing that in very large doses grave evils may be produced by both.

Among the unpleasant effects connected with the nervous system excitement, instead of sleep, has been known to follow the use of chloral; amylhydrate, too, though very rarely, has produced excitement before sleep. After sulphonal patients sometimes pass a restless and excited night, occasionally there are bewilderment and restlessness, rarely delirium. Paraldehyde is practically free from this inconvenience. It may be that the greater popularity of sulphonal makes us better acquainted with its effects; but none of the other hypnotics seems to produce such disturbances of the nervous system as those reported after sulphonal, though amylhydrate occasionally causes headache, giddiness, and a feeling of drunkenness. All the hypnotics probably have some direct action on the spinal cord, but the comparative influence of the newer hypnotics on spinal centres requires further investigation.

It is with regard to the influence on circulation and respiration that the newer hypnotics differ so markedly from the older. Chloral, under some conditions, in not very large doses, may give rise to danger owing to its effect on the circulation; it may tend to weaken the respiration, though not so powerfully as opium, whose evil effects are seen chiefly in its depressing influence on the respiratory function.

The newer hypnotics are, to a large extent, devoid of this influence, and very rarely affect the circulation and respiration unless given in such doses as are not used medicinally. The newer hypnotics containing alcoholic radicals produce very little effect on circulation and respiration, and in these

ways are superior to both chloral and opium. In the case of methane this is what might be expected from the chemical constitution of the drug, for in it we have an alkyl compound, into which carbamic acid also enters; now carbamic acid contains the amidogen group NH_2, which tends to stimulate the respiratory centre, and an ethyl compound of carbamic acid is likely to have communicated to it the special influence of the NH_2 group.

Gastric disturbances do not commonly occur after the exhibition of chloral or any of the newer hypnotics. The flushing, blotchy rashes, and purpura which chloral hydrate produces, owing to its influence on the vascular system, and perhaps, too, on the blood, are not usually seen after any of the newer hypnotics.

The effects of habituation on the action of the newer hypnotics has not yet been settled; it is probable that the system does not readily become tolerant of them, and that the dose does not have to be increased. In the case of sulphonal a cumulative action is possible, but the other hypnotics of this class are not cumulative in their action.

Bromide of potassium is often a satisfactory and safe remedy in many forms of insomnia; but, this failing, we are often bound to resort to some other drug. Recourse to chloral hydrate is a possible cause of great evil; it is seductive, and many have received great injury from it. It seems to be well proved that the system does not get so habituated to chloral that large doses can be taken without danger, and there seems to be good reason for believing that fatal consequences at times arise from a dose which has several times previously been taken with impunity. We ought never at once to order chloral for simple sleeplessness, but should first order one of the newer hypnotics. In slight cases urethan in doses of from 20 to 30 grains, is often very successful. It is not disagreeable, especially when given in a sweetened, slightly flavored mixture; and of all the hypnotics it is the least likely to give rise to dizziness, headache, or other discomfort. It should be given immediately before the patient settles down to sleep, for it is quickly absorbed, and the slightest disturbance may prevent its good influence. Though the effect of the drug is of short duration, the sleep induced is continued naturally. If necessary, the dose may be increased up to two drachms; a larger dose than this at times causes dizziness, if it does not produce sleep.

The tastelessness of sulphonal has rendered it a favorite remedy in simple sleeplessless. Doses of from 10 to 15 grains often fail, and it is necessary to raise the dose to 20 or 30 grains; larger doses are sometimes recommended, but, from doses above 20 grains, troubles affecting the nervous system are sufficiently common to render some warning to the patient with regard to their possible occurrence desirable. It should be administered, finely powdered, in soup or warm milk, some hours before bedtime.

Paraldehyde is a nauseous remedy, and no one can take it secretly, as the breath always indicates the nature of the drug swallowed. Amylhydrate should be administered in plenty of water, as eight parts of water are required to dissolve one of it.

Hypnotics may sometimes be used in combination when they fail singly; chloral and urethan are often of signal benefit. When sleeplessness is due to pain no other drug approaches opium in value; after opium, though at a long

interval, comes chloral, and below chloral in efficacy come the other hypnotics, urethan being the weakest of all.

In cardiac affections accompanied by sleeplessness opium stands out prominently as the best soporific, especially when given in the form of subcutaneous injections. Chloral hydrate is always to be looked upon with suspicion; the more harmless soporifics should be tried first.

In the sleeplessness attending lung affections opium is, of course, out of the question; chloral should be used after milder remedies have been tried. Amylhydrate seems to have some advantages over the others in these cases.

Where delirium is associated with sleeplessness, as in delirium tremens, the milder hypnotics usually fail unless given in very full doses, and urethan is of little value. The older hypnotics, chloral and bromide of potasium, are more effective remedies. In cases of sleeplessness with delirium hyoscine is often used with much advantage, especially where great mental disturbance is accompanied by considerable excitement of the circulation. In mental diseases chloral in continued doses may give rise to serious evils, and opium is a two-edged sword; bromide of potassium often fails, unless given in quantities to affect seriously the heart; urethan is too feeble; sulphonal, paraldehyde, and amylhydrate, all have their advocates, and in moderate doses seem worthy of trial. As amylhydrate has been known to produce very serious effects when given in excessive doses, and sulphonal, in large amounts, is capable of giving rise to unpleasant nervous phenomena, it appears probable that paraldehyde is the best drug to give when hypnotics have to be administered in full doses and continuously. Dr. Clouston, after long experience, believes that in mental cases paraldehyde is the purest and least harmful hypnotic when insomnia is marked and intractable. He begins with 40 minims or a drachm, and goes up to 2 drachms in ordinary cases, sometimes 3 or 4. Sulphonal, he says, will not compare with it. Other observers praise sulphonal, especially if given in small and repeated doses.—*British Medical Journal*, November 2, 1889.

Somnal.

A new hypnotic, which has been named somnal, by some somnol, is described in a Berlin pharmaceutical journal by Herr Radlauer, who states that, chemically, it is ethylated chloral-urethan. It has a melting-point of 107° F. It is not acted upon by nitrate of silver or by acids, and may be prescribed in half-drachm doses, dissolved in water with a little syrup of some kind. As a rule, such a dose as this acts in about half an hour, and produces six or eight hours' sleep. No unpleasant after-effects have been observed. There appears to be no interference with the digestive, circulatory, or respiratory organs, so that, according to the writer, the new drug has all the advantages of chloral without its disadvantages.—*Lancet*, November 16, 1889.

Saccharin as a means of Acidifying the Urine.

While it is usually not difficult to render an acid urine alkaline, our means of rendering an alkaline urine acid are less satisfactory.

When saccharin was first announced, it was mentioned among its proper-

ties that it was unaffected by the digestive fluids, and was eliminated unchanged in the urine. Some time later DR. ANDREW H. SMITH had occasion to manipulate with this substance, and was struck with its strongly acid property; it occurred to him that so decided an acid, of such a stable composition as to resist decomposition in the system, and electing the kidneys as its way of exit from the body, would supply exactly the agent required for acidifying the urine.

The idea was tested on a boy suffering with transverse myelitis, whose urine, which required to be drawn with the catheter, was ammoniacal and very offensive. A few grains of saccharin, administered three times a day, promptly changed the reaction of the urine to acid, and did away completely with the offensive odor; not only so, but the irritation of the bladder became less and the formation of pus was diminished.

Shortly after this, Dr. Smith was in attendance upon a case of subacute meningitis in a child twenty months old. The urine, which dribbled constantly into the diaper, was alkaline, and its odor, though not ammoniacal, was peculiarly sickening. Every effort was made in the way of cleanliness, but the atmosphere about the bed was extremely disagreeable. Small doses of saccharin were prescribed, and immediately removed the fetor, to the great relief of the parents and attendants.

A third case was that of a woman of eighteen who was suffering from acute cystitis. The urine was alkaline and contained a large amount of ropy mucus and pus. An attempt to wash out the bladder was abandoned, on account of the severe tenesmus excited. The contact of the catheter with the wall of the bladder caused hemorrhage. Five grains of saccharin were administered, thr. e times a day; on the following day the urine was neutral, and in four days more it was acid, and contained no mucus and but very little pus. Ten days later the urine was entirely normal, the symptoms had disappeared completely, and the patient was discharged cured.

It is probable that a part of the efficacy of saccharin in these cases is due to its being a powerful antiseptic, in addition to its acid property.—*Medical Record*, November 16, 1889.

SOME OF THE RECENT APPLICATIONS OF MENTHOL.

The most familiar employment of this camphor is as a local application for the relief of pain, and menthol cones are prepared and sold in the shops for this purpose. The relief obtained by such applications is usually but temporary, yet in some of the milder forms of facial neuralgia and so-called rheumatic pains the remedy is of real service. In pruritus, also, the analgesic properties of the drug have been turned to good account. It is employed for this purpose in ointment, spirit, or liniment, in the strength of from one part in twenty to one part in ten. A very good preparation for this purpose is that recommended by Eloy, of a solution of fifteen grains of menthol in one ounce of forty per cent. alcohol.

Still another use for the remedy, as externally applied, is in the treatment of furunculosis, and more especially of furunculosis of the external auditory canal. Here the bactericidal properties of the drug, as well as its analgesic action, come into play. DR. CHOLEWA has made trial of menthol in these

cases, and commends it most highly. He applies it by means of a pledget of cotton moistened with a twenty per cent. solution, and inserted into the canal. The application is said to cause a little smarting at first, but this is soon succeeded by entire relief of pain, and a speedy subsidence of the inflammatory process.

Ringworm of the scalp is said by MR. MALCOLM MORRIS to yield more promptly to applications of menthol than to any of the ordinary remedies employed for this purpose. One part of menthol, four of chloroform, and twelve of olive oil is the formula recommended in such cases. In the treatment of various affections of the upper air-passages, also, good results have been obtained in local applications of menthol in the form of solution, vapor, or spray. Decided improvement has followed its use in cases of laryngeal phthisis.

For nasal and pharyngeal catarrh much benefit is often derived from sprays of menthol dissolved in oil or fluid vaseline, in the strength of from one to twenty or thirty per cent. In hay fever WILLIAM HILL, of London, has found menthol to serve an excellent purpose as a substitute for cocaine. He applies a ten or twenty per cent. solution in olive or almond oil to the sensitive area within the nose by means of a brush or atomizer. In the chronic bronchitis of old age, Nyes speaks favorably of inhalations of menthol, which, he says, not only facilitate and rapidly diminish the expectoration, but also allay the cough and reduce the number of paroxysms. These inhalations have also been used with good effect in whooping-cough. Finally, the same mode of application has proved useful in Jores's hands in relieving asthma. Inhalations of a twenty per cent. solution in olive oil were then tried, with the most satisfactory results—the rattling râles disappeared almost immediately, and the respiration soon became normal.

Menthol has not yet been employed to any extent internally, although it is said to act efficiently when so given in controlling certain painful affections. The dose for internal administration is from fifteen to sixty grains per day.

If the effects obtained should be found to be uniformly produced, we might well be justified in placing menthol among the most valuable of the minor therapeutic agents.—*Medical Record*, November 23, 1889.

ACTION OF THALLIN.

M. ALBERT ROBIN has made a careful study of the physiological action of thallin, especially in regard to its effects upon the chief constituents of the urine. The tests were made upon healthy men, between sixty-one and sixty-eight years old, and the dose of thallin given was, as a rule, fifteen grains, though at times as much as forty-five grains were administered.

It was found that this drug diminishes the total amount of excretion; the organic constituents are lessened to a greater extent than the inorganic, except that the elimination of phosphoric acid and of compounds of sulphur and potassium is increased. The destruction of tissues rich in sulphur seems to continue after the thallin is discontinued.

From such observations he infers that thallin acts as a poison to the nervous system, the red blood-corpuscles and organic tissues rich in sulphur and phos-

phorus. Its antipyretic properties are believed not to depend upon any direct antiseptic action, but to be the consequence of a toxic action on the red blood-corpuscles and on the nervous system. Consequently, thallin ought not to be prescribed in fevers, as it is a dangerous antipyretic. In a word, the inference from these experiments is that thallin should not be used—this study of its effects upon nutrition suggests only contra-indications.—*Archives de Physiologie*, October, 1889.

Treatment of Chronic Cystitis.

Prof. v. Mosetig-Moorhof recommends half a drachm of the following emulsion injected into the bladder, after previous cleansing, in a pint of water:

℞.—Iodoform	ʒxiij.
Glycerin	ʒx.
Distilled water	ʒiiss.
Gum tragacanth	grs. iv.—M.

The injection should be made on every third day. After three or four injections the catarrhal inflammation is much or wholly relieved.—*Therapeutische Monatshefte*, October, 1889.

Nocturnal Incontinence of Urine.

A combination of bromide of potassium and tincture of belladonna is recommended as superior to either of these agents alone. Before retiring, ten grains of the bromide should be taken, and at the same time from ten to twenty drops of the tincture of belladonna.—*Therapeutische Monatshefte*, October, 1889.

Naphthalin and Cataract.

Dr. Kolinski, writing in von Graefe's *Archiv*, vol. xxv. 2, points out that naphthalin, which is coming a good deal into use from the effect it seems to have on the microörganisms existing in the intestines in some cases of diarrhœa, possesses also the property of producing changes in the nutritive power of the blood, thus being liable to set up degeneration of the bloodvessels. As the eye is one of the most highly vascular organs, it is one of the first to show any of the changes induced by interference with the nutritive property of the blood. Naphthalin is said first to cause small extravasations in the choroid and in the ciliary body, then ecchymoses and white patches in the retina, and, finally, cloudiness in the lens and crystals in the vitreous.—*Lancet*, November 16, 1889.

Incompatibility of Antipyrin and Chloral.

M. Blainville, a pharmacist of Paris, was called upon to put up a prescription containing sixty grains of antipyrin and seventy-five grains of chloral in half an ounce of water. An oily precipitate was immediately thrown down which resembled neither chloral nor antipyrin in taste, but recalled somewhat that of coriander-seed.

A mixture of antipyrin and quinine is also incompatible, both substances being at once precipitated from the solution.—*Medical Record*, November 23, 1889.

MEDICINE.

UNDER THE CHARGE OF

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NAPHTHOL AS AN ANTISEPTIC IN TYPHOID FEVER IN CHILDREN.

ELOY (*Gaz. Heb. de Mĕd. et de Chir.*, 1889, No. 40, 643) says that in imitation of the method of Bouchard we may, as Legroux has done, prescribe naphthol in typhoid fever in children. After the disease is established, 5 to 10 grains of calomel, divided into two doses, should be given. Two days later begin the administration of naphthol in the following manner: If diarrhœa of moderate degree is present, give every hour 3 grains of β-naphthol alone. If diarrhœa is profuse, give 6 grains of a mixture of equal parts of β-naphthol and salicylate of bismuth. Ten of these doses are to be taken in twenty-four hours. If, on the other hand, there is constipation, the bismuth should be substituted in the same amount by salicylate of magnesia, and the mixture administered in the same manner and dose.

THE TREATMENT OF TYPHOID FEVER WITH COLD BATHS.

JOSIAS (*L'Union Mĕdicale*, 1889, No. 137, 691) reports thirty-six cases of typhoid fever treated with cold baths, administered systematically every three hours, if the temperature reached 102.2° F. But one death occurred, and this was a patient *in extremis* when the treatment was instituted. Twenty-seven of the cases were benign but hyperpyretic, and the remainder grave. Neither intestinal hemorrhage, the presence of menstruation, nor the evidences of pneumonia or of renal affection, were allowed to interfere with the treatment. One of the advantages is the excessive diuresis produced; perhaps a consequence of the great thirst, which allows of the administration of large amounts of liquid nourishment (four to five quarts daily). As a result of this hyperalimentation the duration of the malady is less, and the forces are better preserved. The author believes that the method occasions abundant diarrhœa, which he considers an advantage, on account of its cleansing effect on the intestine.

ANTISEPSIS WITH RESORCIN IN THE TREATMENT OF DIPHTHERIA, PULMONARY TUBERCULOSIS, PERTUSSIS, AND SOFT CHANCRE.

After a long article on this subject, with reports of cases, A. LEBLOND (*Journ. de Mĕd. de Paris*, 1889, No. 39, 578) closes with a *résumé* of his results and conclusions:

I. *Diphtheria.*—If the treatment is applied from the outset the extension of

the plaques is very limited, and the larynx seldom becomes involved. If the glands are already swollen and the plaques in the pharynx abundant, the treatment will in forty-eight hours remove the swelling, and almost always arrest the production of membrane. In all the cases reported the general condition remained good, and the appetite and spirits were preserved; showing that a general intoxication by the disease had been avoided. When the larynx was invaded from the outset treatment was less efficacious. Still the use of resorcin by fumigation and atomization gave good results when the trachea was large enough to prevent asphyxia from coming on very rapidly, or when tracheotomy was possible.

II. *Pertussis.*—After a dozen days in which the treatment is employed, the number of paroxysms is reduced to four or five in twenty-four hours. Some of the symptoms now disappear but slowly, which is to be explained on the ground that they are due to the nervous irritation remaining, though the parasitic principle has been destroyed.

III. *Tuberculosis.*—The action of resorcin only became evident in the subacute forms of the disease. Usually after fifteen days the general condition improved, the sweats lessened, and the fever diminished. The local condition showed a diminution of the râles, an increase of the vital capacity, and the progress of cicatrization of the ulcerated surface. By continuing the treatment after these results had been obtained, the author was able to maintain his patients in a satisfactory state; some for two years, others for five or six years. In the treatment of acute phthisis, or in advanced cases, resorcin only produced temporary benefit.

IV. *Soft Chancre.*—In this the author has sometimes obtained a cure in twenty to twenty-five days, thus gaining two weeks on cases treated by other methods, and especially by iodoform.

As regards the method in which resorcin should be employed, the author gives the following *résumé:*

I. *Diphtheria.*—Treatment is local, consisting of the painting of the pharynx with a solution of three parts of resorcin in thirty parts of glycerin. This procedure should be repeated every hour at least, night and day. The child should be wakened if asleep, and sufficient force employed to allow of the brush coming thoroughly in contact with all the diseased surface. Atomization of a solution of one part resorcin and fifty of distilled water, may also be made continuously in the room with a Lister spray apparatus.

II. and III. *Pertussis and Tuberculosis.*—Fumigations of powdered resorcin are to be used, made by heating the drug in a small metallic vessel provided with an alcohol lamp. Fifteen grains of resorcin usually suffice for each fumigation. In pertussis fumigation should be made every two hours, day and night, and this continued for twenty days. In tuberculosis the fumigations should be increased to such a degree that the patient actually lives in an antiseptic atmosphere. This method has met with great success. In practice, however, we must content ourselves with four or five fumigations during the day, though during the night they can be made almost continuous. The patient should also take internally two or three tablespoonfuls daily of a solution of two and a half drachms of resorcin in sixteen ounces of syrup of turpentine.

IV. *Soft Chancre.*—The drug should be applied in powder directly to the ulcer for five or six days, after which any indifferent treatment may be employed.

The Treatment of Chorea by Antipyrine.

Moncorvo (*Rev. Gén. de Clin. et de Therap.*, 1889, No. 36, 576) published in 1888 his favorable experience with antipyrine in two cases of chorea in children, and now reports his trial of it in four new patients. In three of them other means had been used without avail, and in one of the three the disease had lasted over three years. Full doses af antipyrine were given—seventy-five to ninety grains daily, at the age of ten to fourteen years—and the effects were excellent and prompt. At the same time the general health and strength improved.

Aphasia Treated by Trephining.

Mouisset (*Lyons Méd.*, October 6, 1889, 204) exhibited before the Société des Sciences Médicales de Lyons a patient who had suffered from epileptic attacks for five years, and who, as a result of a fall during one of them, had suffered from prolonged loss of consciousness, followed by persistent aphasia, paresis of the right arm, slight paralysis of the facial and hypoglossal nerves of the same side, and attacks of Jacksonian epilepsy. The symptoms indicated a peripheral lesion, and the exact localization of it. Trephining revealed the existence of a hæmatoma of the dura mater, and permitted the blood to be cleaned out. On the next day the tampon was removed from the wound, and the patient spoke some words distinctly—the first time since his fall. Recovery went on rapidly, and the aphasia disappeared in about eighteen days.

Suspension in Locomotor Ataxia.

At the Thirteenth Congress of the Italian Medical Association, held at Padua from the 22d to the 27th of September, Dr. G. Bianchetti related his experience with the suspension treatment in tabes dorsalis and other nervous diseases.

Eight ataxic patients, of whom six were men and two women, were treated by suspension alone. In three of these cases the treatment had to be discontinued, owing to the fact that it produced amaurosis, in two of them after five, and in the other after seven suspensions, none of which exceeded two minutes. Visual power was distinctly impaired after each treatment. In four of the remaining five cases, on the other hand, "marvellous results" were obtained. The number of suspensions varied from twenty to fifty-two. Lightning pains, gastric and vesical crises, motor incoördination, and impotence, all disappeared, and the patients gained in weight from three to eight pounds. The vertebral column was carefully measured during the suspension, and was found to be lengthened from one to one and three-fifths inches. Dr. Bianchetti also tried this treatment in some cases of spastic paralysis, paralysis agitans, impotence caused by masturbation, and incipient progressive paralysis, but without any effect.

Dr. Marina gave the results of his experience in twenty-one cases of tabes, besides a few of paralysis agitans, etc. In one-half of the ataxic cases sus-

pension was followed by marked relief of the symptoms, but in the remainder the pains were made worse. He confirmed Dr. Bianchetti's observation as to the bad effect produced by suspension on the optic nerve. In one of his cases, on the other hand, it seemed to have a good effect on the auditory nerve. Dr. Marina noticed that better effects were produced by suspension in persons of small stature and light weight. It is interesting to note that in one of Dr. Marina's cases, after fifty suspensions, the knee-jerk could, after five or six taps, be induced more violently than in the normal state, although before the treatment it was quite inert. In the non-tabetic cases this method had no effect whatever. It may be added that a case of locomotor ataxia in which death was caused by suspension was not long ago reported in an Italian medical journal.—*British Medical Journal*, October 26, 1889, 938.

EULENBURG and MENDEL (quoted in *Centralbl. f. d. ges. Ther.*, October, 1889, 606) report the results obtained by them with the suspension treatment. Their observations were made upon forty cases, and extended over three months. The total number of suspensions equalled 975, or an average of 24.375 for each person. The suspensions were made, as a rule, only three times a week, though in some suitable cases, who had become accustomed to it, they were made daily, and without any bad results. The duration of the suspension was from one to three minutes. Only exceptionally did it reach four minutes, though in some susceptible cases it lasted but from one-half to three-quarters of a minute. Thirty-four of the patients were cases of tabes. Five of these soon abandoned the treatment, and of the remainder a few were decidedly improved by it, some were benefited only moderately, and eleven showed no improvement at all. The improvement appeared to have only a symptomatic character, and affected very unequally a group of prominent and even cardinal symptoms, whereas certain appearances which might be called pathognomonic (Westphal's symptom, myosis and Argyle-Robertson pupil) were in no case at all influenced by suspension, no matter how persistently employed.

Apart from temporary effects seen after each suspension, and of which no account is taken here, improvement was most frequently observed in the power to sleep and in the general condition. After this Romberg's symptom and the affection of the bladder were oftenest influenced. An improvement in the neuralgic symptoms took place in ten cases, of locomotion in nine cases, of paræsthesia in five cases, and of hyperæsthesia and anæsthesia in three cases.

In several patients in whom it was necessary to omit the treatment for a time, the good results which had been gained were observed to disappear.

The treatment was also tried in one case of disseminated sclerosis, one of chronic myelitis, one of traumatic neurosis, and three of paralysis agitans (one of which did not remain under treatment). In the first there was evident improvement, and in one case of paralysis agitans the result was possibly favorable. In the others no good results were obtained. The authors conclude that the method of treatment by suspension is not altogether valueless, but that at the same time it is not apt to fulfil any extended expectations.

MOUISSET (*Lyon Méd.*, August 11, 1889) says that this treatment should be employed in ataxia in such a way as not to cause fatigue. To accomplish this, the patient should be elevated slowly and steadily. If he is unable to

walk, the apparatus should be applied while he is sitting, and he then should be assisted to an erect position before suspension is commenced. The duration of the suspensions should be from thirty to sixty seconds at first, and this may be later increased to five minutes. The heavier the patient the shorter time should the suspension continue. Eight cases of locomotor ataxia were treated after this method. One of these was suspended only three times. In another case, well advanced in the disease, tingling in the lower limbs, giddiness, and disturbance of hearing and sight were experienced during the suspension, but ceased as soon as the patient was let down. In the six remaining cases there was evident improvement in the sensory and motor disturbances.

Treatment of Whooping-cough with Resorcin.

Andeer (*Centralbl. f. d. med. Wissensch.*, No. 40, 1889), having already published his favorable experience with resorcin in whooping-cough, adds other instances of the beneficial action of the drug in this disease. A girl of seven years had suffered for eight days from the catarrhal form of whooping-cough, with sleep greatly disturbed by frequent paroxysms. Change of house and of climate had been of no avail. She was then given a two per cent. aqueous solution of resorcin, of which a half-wineglassful was to be partly swallowed, partly used as a gargle, four times daily. On the second day of the treatment the number of the paroxysms diminished greatly, and the nights were scarcely disturbed at all; and in eight or ten days all cough had disappeared. In two other cases, resorcin used in this way stopped the whooping-cough within four days, and in three others within a week. Finally, an infant, about six months old, in whom all the other methods of treatment which had been employed had proved useless, was given a 0.5 per cent. solution of resorcin, together with sugar; the child being made to suck it out of its bottle. Vomiting had been frequent, following every paroxysm of coughing, but ceased after the second administration of the remedy, and the cough, too, disappeared by the fifth day.

Non-tubercular and Non-cardiac Hæmoptyses in Elderly Persons.

Sir Andrew Clark (*British Medical Journal*, October 26, 1889) says that, at one time believing that every case of pulmonary hemorrhage was due to pulmonary tuberculosis, or malignant growth, or to aneurism or disease of the heart, a case was finally brought to his notice which not only convinced him of the error of this view, but revealed a distinct cause for pulmonary hemorrhage. This patient was a man, of about fifty to sixty years of age, suffering from moderate progressive osteo-arthritis and subacute bronchitis with some emphysema. The heart and bloodvessels appeared sound. Very soon he began to cough up blood in small quantities at short intervals, and, in spite of all treatment, died from hemorrhage within a week. The autopsy revealed isolated patches of emphysema surrounded by hemorrhagic extravasations in the back and lower part of both lungs. Nowhere could there be discovered the slightest evidence of structural change, which would have accounted for the hemorrhage. A microscopical examination showed that the seat of the bleeding was in the immediate neighborhood of the patches of emphysema, and that the minute terminal arteries in these localities were

always diseased. There seemed to be a causal relation between the emphysema, the hemorrhage, and the condition of the bloodvessels. The author was led to conclude that the initial change had been some minute structural alteration in a terminal branch of the pulmonary or bronchial artery; that in consequence there had been a more or less complete obstruction to the blood-supply of the territory involved; following this there had arisen degeneration of the capillaries and venous radicles, determining a true atrophic emphysema; that the impairment of the vessel walls had brought about the hemorrhage which ended in death. The structural changes in the affected bloodvessels were limited to nuclear proliferation in the middle coat, and an amorphous and hyaline infiltration of it and the intima. As the patient had for years been a well-marked arthritic, and as the lesions described were akin to those which are found in the diseased articulations, the author concluded that the affection was of an arthritic nature, and might be called "arthritic hæmoptysis."

Some years ago he had under observation a very similar case, in which fatal hæmoptysis occurred in the person of a typically arthritic man, and in whom the autopsy revealed a condition practically identical with that described in the first patient. In the last fourteen years he has seen about twenty cases of hæmoptysis of this kind, some of which he details, occurring in persons over fifty years of age. He draws the following conclusions regarding the affection and its treatment:

1. There occurs in elderly persons, free from ordinary diseases of the heart and lungs, a form of hæmoptysis arising out of simple structural alterations in the terminal bloodvessels of the lung.

2. These vascular alterations occur in persons of the arthritic diathesis, resemble the vascular changes found in osteo-arthritic articulations, and are themselves of an arthritic nature.

3. Although sometimes leading to a fatal issue, this variety of hæmoptysis usually subsides without the supervention of any coarse anatomical lesion of the heart or of the lungs.

4. This variety of hemorrhage, when present, is aggravated or maintained by the frequent administration of large doses of strong astringents, by the application of icebags to the chest, and by the restricted indulgence in liquids to allay the thirst which the astringents create.

5. The treatment which appears, at present, to be the most successful in this variety of hæmoptysis, consists in diet and quiet; in the restricted use of liquids, and the stilling of cough; in calomel and salines; in the use of alkalies with iodide of potassium; and in frequently renewed counter-irritation.

Prevention of Tuberculosis.

Heller (*Münch. med. Wochenschrift*, 1889, No. 43, 742), in a valuable article on this subject, recommends that the title "consumption" be replaced by the word "tuberculosis," since the former applies as well to some other conditions, and does not describe the usual evidences of tuberculosis in children. He calculates that almost one-seventh of the population die of the disease; that a patient with tuberculosis pulmonum may expectorate about 7200 million of bacilli in a day; that the great influence attributed to in-

heritance in the production of the disease is an entire mistake; and that the affection is essentially an infectious one. He states his arguments in proof of this; and dwells also on the danger threatening from the frequency of the disease in cattle and the presence of the bacilli in their milk. As the tubercle bacilli in the sputum only become generally disseminated when dried, it is of the utmost importance to guard in every possible way against this drying and distribution. After making numerous suggestions as to the manner in which this disinfection in public and private places is to be carried out, the author sums up the substance of his paper as follows:

1. Tuberculosis is the most important of diseases in relation to political economy, both on account of its high rate of mortality, the great loss entailed by the long duration of the disease, and the great danger to others from infection.

2. The chief sources of the development of tuberculosis are the expectoration of tuberculous patients and the milk of tuberculous animals.

3. The measures to be carried out against it, are: (*a*) compulsory reporting and disinfection in all fatal cases of tuberculosis; (*b*) compulsory reporting of cases of bovine tuberculosis, and veterinary supervision and disinfection of the stables; (*c*) precautionary measures for rendering the sputum harmless in all public—and, as far as possible, private—buildings in which persons mingle with each other; especially schools, business establishments, prisons, hospitals, etc.

In this connection, VILLEMIN'S report on behalf of the Committee appointed by the Paris Congress for Tuberculosis is of interest (*Gaz. Hebdom. de Méd.*, 1889, No. 44, 713). The general conclusions were that tuberculosis has the largest death-rate of all diseases, killing one-fourth to one-seventh of the population of large cities. That it is an infectious, parasitic disease, caused by a microbe, but that it is transmissible to healthy individuals only under certain conditions. It may enter the system by the respiratory passages, or the digestive tract, and by the skin and mucous membranes if there be a solution of their continuity. The sputum of consumptive patients is the most frequent source of contagion, but it is almost ineffective while in the liquid state. The contagious principle is also found in the feces.

It is necessary, therefore, to use the greatest precaution in regard to the sputum of consumptives, which should be deposited only in spit-cups, and these should always contain a certain quantity of liquid. All public and private places of meeting should be provided with spittoons. Linen soiled by the dejections of consumptive patients, should not be allowed to dry, and should be boiled before sending it away for washing. Sleeping in the room with a consumptive should be avoided. All rooms in hotels, etc., where such persons may take lodging, should be so arranged that thorough disinfection can be easily practised, and all articles with which the patients have had anything to do should never be used by others until disinfected by steam, under pressure, boiling, sulphur vapor, or coating with lime.

The bacillus may also be found in the flesh, blood, and milk of animals used for food. Particular attention should be given to the milk, since we know least about the source from which we obtain it. A tuberculous mother should not nurse her infant, which should be committed to a healthy wet-nurse living in the country. If cow's milk must be used, it should always be

boiled; but asses' and goats' milk unboiled is far less dangerous. The meat from tuberculous animals must be prohibited, and blood should never be drunk at slaughter-houses.

There are certain persons specially predisposed to contracting tuberculosis, and these should take special precautions. These persons are: Those born of tuberculous parents, or belonging to families in which there have been a number of tuberculous patients; those debilitated by excesses or privations; those suffering or recovering from measles, pertussis, variola, and, above all, diabetes.

The Curability and Treatment of Cirrhosis of the Liver.

Huchard (*Rev. Gèn. de Clin. et de Thér.*, 1889, No. 40, 649) says that the belief is now general in the curability of many cases of hepatic cirrhosis under the employment of the iodides and a milk diet, but that there is a difference of opinion as to what forms of cirrhosis are curable. Marini has recently maintained that the classic cirrhosis of Laennec, the small, hard, and contracted liver, is not curable, and that only the hypertrophic form is amenable to treatment, and this only when treatment is commenced early. On the other hand, Lancereaux affirms that the ordinary alcoholic cirrhosis, the atrophic form, is almost always improved, if not cured, by the iodides and a milk diet; while the form attended by enlargement of the liver yields less easily to treatment, and that accompanied by icterus is still more obstinate.

The experience of Huchard is that atrophic cirrhosis is curable, especially in the early hypertrophic stage, while the form which is primarily and constantly hypertrophic, whether with or without icterus, is less easily influenced.

The treatment is complicated and ought to be carried out with precision. In the first place, iodide of potash or of soda, in doses of 8 to 15 or 30 grains daily, should be given from the beginning. In cases which extend over a long time, it is better to use the soda salt, as being more assimilable and less dangerous. Calomel may be given in conjunction with the iodides. It is best prescribed about every fifteen days, four powders, each of 3 grains. In this way the calomel acts not only as an alterative, but as a diuretic; and it is very important in this disease that diuretics be given. When thus administered the dangers of stomatitis are not so great.

As regards aspiration of the fluid in the abdomen, the author insists that most physicians do this too late, and that to remove a large quantity is actually to produce a serous hemorrhage, by which the patient may be greatly, or even dangerously enfeebled. Every case of ascites should be aspirated early, and if the effusion be large, not all the fluid should be removed at one time. After the aspiration a purgative should be given and the employment of diuretics insisted on, since they act much more effectively after the ascites has been removed.

To influence the hepatic lesion revulsives are to be employed in the region of the liver—such as cupping, blisters, cauterization, etc. Hydrotherapy in the form of the Scotch douche in the hepatic region can also be used.

Of all treatment the milk diet is the most important. Two and a half or three quarts of unboiled or slightly warmed milk should be taken during the day in divided doses about two hours apart. Fifteen or twenty minutes

should be occupied in swallowing in small mouthfuls a cup of milk, in order to prevent the formation of a large curd in the stomach. If it produces constipation small doses of rhubarb, magnesia, or sulphur may be given. If, on the other hand, it causes diarrhœa, or is not well borne by the stomach, one-half tablespoonful of hot water may be added, or one-half tablespoonful of Vichy from one of the cold springs. If this does not correct the difficulty, powders of 3 grains each of pepsin, pancreatin, and bicarbonate of soda may be taken at times after a glass of milk. To make the milk acceptable to the patient in cases where there is a dislike to it, it may be flavored in various way. Under the influence of this combined treatment improvement will, in favorable cases, begin to show itself within twenty or thirty days.

Cocaine in Diabetes.

Thomas Oliver (*Lancet*, October 12, 1889, 735) remarks on the frequent disappearance of glycosuria on the development of some illness attended by febrile exacerbations. Thus toward the termination of diabetes, when phthisis has become well established, we frequently notice that sugar disappears from the urine when the temperature becomes high. A high temperature, then, or rather the condition which causes the temperature to become high, is seen to be followed by a disturbance of the glycogenic function of the liver. From observation of these facts it would seem that the employment of medicines of the pyogenic class might be followed by good results in the treatment of diabetes. The author, therefore, tried cocaine in quarter-grain doses three times a day in a case of this disease, with excellent results. There occurred, namely, a total disappearance of a most obstinate constipation which had refused to yield to the strongest purgatives; disappearance of a gait not unlike that of ataxia; of delusions, and of a sense of muscular fatigue; the return of a feeling of improved health and strength, with a gain in weight; a marked diminution in the amount of urine excreted; a very decided reduction in its specific gravity and a very noticeable fall in the daily elimination of sugar. Cocaine failed, however, to raise the temperature. The administration of the drug was stopped at one time, with an immediate and great increase in the amount of urine and of sugar excreted.

Unfortunately the patient, when everything seemed to be doing well, took cold and developed phthisis, from which he died.

Enemata of Creolin in Dysentery.

Ossowsky (*Gaz. Hebd. de Méd. et de Chir.*, 1889, No. 40, 649, from *Vratch*, 1889, No. 44) has employed creolin in 16 cases of dysentery in soldiers. The treatment consisted in the injection of a 0.5 per cent. solution, administered two to four times a day through a long rubber tube. In 9 cases the bloody stools ceased by the third day, and in 4 cases by the fifth to the seventh day; and in the 4 (?) last remaining cases the cessation was immediate. The author considers the disinfecting power of creolin considerable, while it is less toxic than carbolic acid or sublimate. Its administration not only removes the blood from the passages, but relieves the other symptoms, including the tenesmus. Then, too, it prevents the catarrh of the large intestine, and may

be followed, if desired, by injections of a 0.5 per cent. solution of acetate of lead, or 1 to 2 per cent. solution of tannic acid. Kolokoff has also obtained results by this method of treatment confirmatory of those of Ossowsky. Both observers lay great stress on the proper position of the patient. He should, namely, be standing with the trunk bent forward, and the hands supported on the bed.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE UNIVERSITY PHILADELPHIA, AND GERMAN HOSPITALS.

The Latest Listerian Method in the Dressing of Wounds.

Sir Joseph Lister has lately published a full account of the antiseptic method now employed by him, with his reasons therefor.

In the old Listerian method carbolic acid was the antiseptic employed, but this had the objection of volatility as well as of great slowness of action as a germicide. Corrosive sublimate, which succeeded it, was stable and acted with rapidity, but was exceedingly irritating, and, in addition, was precipitated by the albumen contained in the serum of the blood. This precipitate, it was discovered by Sir Joseph Lister, possessed powerful antiseptic properties with much less power of producing irritation; and he therefore devised a form of antiseptic dressing which he called "the sero-sublimate gauze," which consisted of gauze charged with a solution of corrosive sublimate in the serum of the blood. This, however, was difficult to manufacture and produced a harsh and non-absorbent material which was mechanically objectionable. It was succeeded, in his hands, by the combination of chloride of ammonium and bichloride of mercury, known as sal-alembroth; which, while much less irritating, was so exceedingly soluble in the blood serum that whenever the discharges from wounds were copious, it was washed out of the dressings, leaving them without antiseptic property. For these reasons Lister in time discarded this material and employed for a considerable period a gauze containing three or four per cent., by weight, of the biniodide of mercury. This was less soluble, non-volatile, powerfully antiseptic, but, again, extremely irritating, so that the least contact with the skin produced an intense erythema, even going on to vesication.

Lister was thus led to look further for the ideal antiseptic, and he has now found it, he believes, in a double cyanide of zinc and mercury. In the *British Medical Journal* of November 9, 1889, the various facts are set forth at length by Lister; and his paper, besides being an important scientific contribution, supplies interesting evidence of the remarkable patience, perseverance, and attention to detail which have invariably characterized the work of this

eminent surgeon. In a clinical lecture delivered November 20th, Dr. J. William White reported (*Medical News*, November 30, 1889) very favorable results from the use of this material, which he has been able, through the kindness of Sir Joseph Lister, to employ for some months in his private work and which he has just introduced into his service at the University and Philadelphia Hospitals.

Its most evident advantages may be briefly enumerated as follows:

In the first place, it is non-volatile; next, it is almost entirely un-irritating; thirdly, it is insoluble in water, and only soluble in 3000 parts of blood serum; and, finally, while it possesses but little germicidal value, its inhibitory power is so high that a solution of 1 : 1200 is sufficient to keep animal fluids permanently free from putrefaction. This combination of qualities is possessed by none other of the antiseptics which have been used; and its deficiency in germicidal power is easily remedied by including in the manufacture of the gauze dressings which are impregnated with this material, a small percentage (1 in 4000) of sublimate, enough to be germicidal, but too weak to be markedly irritating.

The gauze comes in pieces of six yards each, and according to the method explained to White by Lister, should be prepared as follows, the proportions being those required for the impregnation of twenty pieces of gauze, each of that length: A mixture of the zinc and mercury salt and of water is made in the proportion of 800 grains of the former to 28 pints of the latter. The gauze is drawn through this mixture slowly, the apparatus used by Lister consisting of a wooden trough in the shape of an inverted pyramid with a bar a short distance from the bottom, under which the gauze must pass, in that way securing its complete submergence. As it is drawn through it is pressed slightly against the edge of the trough, so as to squeeze out the excess of liquid, and is then dipped in a bath composed of starch 400 grains, boiling water 3 pints, mixed together, diluted by the addition of 11 pints of cold water, and still further by adding 15 pints of a 1 to 2000 sublimate solution. The reason for this last or starch bath is that the double cyanide, if allowed to dry in the gauze without the admixture of starch, will fly out as an impalpable powder whenever the gauze is handled, whereas with the starch it makes a mixture which, while not a chemical compound, seems to be a very intimate association of the cyanide with the starch, the latter holding it in the meshes of the gauze. The bichloride is added for the sake of its germicidal action. The gauze, when taken out of this bath, is laid for a few moments between the folds of a perfectly clean sheet which absorbs the excessive moisture, and is then folded and ready for immediate use. Or it may be dried and used after moistening with the 1 to 4000 sublimate solution.

Another method which is recommended by Lister will probably prove still more simple. A strong solution of starch is mixed with the double cyanide powder, and after this a quantity of the sulphate of potash, which is inert, and is used in this connection just as it is used in Dover's powder, for the sake of the mechanical effect produced by its gritty particles.

Take, for example, if it is desired to impregnate twenty pieces of gauze, each six yards in length, eight hundred grains of the double cyanide. Stir it into a strong solution of starch made with warm water until it is almost pasty in consistence. Add two or three tablespoonfuls of sulphate of potash,

allow the mixture to dry; powder and diffuse it in a 1 : 4000 solution of bichloride, enough being employed to permit of the thorough immersion of all the gauze.

The excess of sulphate of potash is practically gotten rid of in this watery solution, but if it were not it would do no harm, as it is inert. The gauze should then be carefully drawn through this mixture, which is stirred up, the material is deposited in the meshes, and should be dried between a folded sheet if it is needed for immediate use, or over a line in a clean room free from dust. If the latter plan is adopted, it should be moistened again with 1 : 4000 bichloride just before using.

The dressing of a wound, according to the present Listerian method, would then consist in the application immediately over the line of the wound of from six to eight layers of this gauze, out of which the bichloride has been washed by wringing it out once or twice in a solution of 1 to 20 carbolic acid. This leaves the gauze impregnated merely with the absolutely unirritating cyanide; the carbolic acid disappearing by reason of its volatility. Above this are placed successive layers of the moist gauze, and outside of this, if it is necessary to use still other dressing for purposes of pressure or otherwise the ordinary absorbent, bichloride cotton, may be employed.

We have, then, a dressing which would seem to combine all the essentials of a perfect antiseptic, and it is to be hoped that the results obtained from the use of this material will be those which, on *à priori* grounds, we have a right to anticipate.

The Treatment of Tuberculous Disease of the Bones and Joints by Parenchymatous Injections of Iodoform Oil.

Prof. Trendelenburg, toward the end of last year (*Münchener medizinische Wochenschrift*, October 1, 1889), was led by a communication of Dr. Heusner to try iodoform injections in several cases of tuberculous bone and joint disease, and his results were so satisfactory that he has since then employed the same method in a large number of cases. A 5 per cent. ethereal solution of iodoform was used at first, but as it gave rise to great pain and sometimes to sloughing, iodoform oil, 5 to 25, was substituted. It should be freshly prepared just before using. 30 to 50 minims are injected every eight days into the diseased tissues, after careful disinfection of the skin. If abscesses have already formed, they are first emptied and then injected. If fistulæ are present, it is found that injections into the fistulæ themselves are less effective than when they are made into the surrounding tissues. A sublimate dressing is applied after each injection. In injecting into fungous masses and into the tissues around fistulæ, considerable force must be used, which, however, seems to diffuse the iodoform the more widely.

In some cases the beneficial effects of the injections are observed after three or four treatments, in others not until many more have been employed. Pain usually disappears early. In favorable cases the swelling disappears, the abscesses diminish in size and number. The fistulæ are obstinate, and entire healing occurs in them only after long treatment. Movement in diseased joints is partly reëstablished. In other cases a less degree of improvement is obtained, and in others operation becomes necessary, but even these seem

benefited by this preparatory treatment. There were no cases of iodoform poisoning. It seems wise to sterilize the oil used. Control experiments with Peruvian balsam show the superiority of the iodoform oil. Of 109 cases treated in this way, 28 required other operative interference; 36 seemed to be cured; 37 were improved; 12 were not cured; 24 are still under treatment, of whom 14 show considerable improvement.

Treatment of Small Cystic Tumors by Injection of Chloride of Zinc.

Dr. A. Landerer (*Deutsche Zeitschrift für Chirurgie*, Bd. 29, Hefte 5 und 6, 1889) has for about a year, in the treatment of small cystic tumors, such as hygromata, ganglions, ranula, etc., injected a 1 per cent. solution of chloride of zinc, employing from 25 to 35 minims, according to the size of the growth. He does not use any preliminary cocaine injection. Occasionally the injection must be repeated, especially if a sufficient quantity is not used on the first occasion. The resulting symptoms are scarcely noticeable. There is little or no pain. The cyst becomes hard, and is surrounded by a dense œdema, which disappears after a few days. A Priessnitz dressing (hydropathic compress) is agreeable to most patients. During the next four or five weeks the cyst shrinks, and finally disappears entirely.

Landerer has treated in this way 5 ganglions of the dorsum of the hand; a diverticulum of the sheath of the flexor tendon of the fourth finger; 3 cases of housemaid's knee; 6 cases of accessory bursæ in hallux valgus; 1 case of hydrocele in a child of six weeks; 1 case of ranula. He thinks this method the easiest, surest, and most harmless one.

Gunshot Wounds of the Abdomen.

Dr. Lewis A. Stimson, after an interesting and elaborate consideration of the general questions involved in abdominal gunshot wounds, and especially in intestinal wounds, offers (*The New York Medical Journal*, October 26 and November 2, 1889) the following summary of the most important points of his paper:

The (incomplete) hospital statistics of New York City show, for an average period of ten or twelve years previous to 1886, 17 cases of recovery under non-operative treatment after gunshot wound of the abdomen supposed to be perforating. The integral statistics of three hospitals—the New York, Chambers Street, and Roosevelt—contain 23 cases, with 15 deaths—a mortality of 65 per cent. The integral statistics of New York City since 1884 give 29 cases of laparotomy for gunshot wound of the abdomen, with 25 deaths—a mortality of 86.2 per cent.; and the statistics of the three hospitals above mentioned give 16 cases, with 13 deaths—a mortality of 81.2 per cent.

In view of the apparently greater mortality after operation, it is highly desirable that any doubt as to the correctness of the diagnosis in cases recovering without operation should in the future be avoided if possible, and that with this object the track of the bullet should be traced to the abdominal cavity. Preliminary incision along the track of the bullet, or, in case of need, in the median line, is the best and safest means at our disposal to recognize the presence or absence of wounds of the viscera.

The relations between the number and severity of the visceral lesions and the size of the bullet, or the early symptoms, are not, in the majority of cases, sufficiently constant to guide us in the choice between operating and not operating.

An improvement in the results of operative treatment may be expected if the operations are undertaken earlier (before the interference of peritonitis or septicæmia), and if their duration is shortened by rapidity of execution and by restriction of the search for lesions to the readily accessible portions of the intestine and to the probable course of the ball. While some may die through the overlooking of a perforation, fewer, I think, will be killed by the operation.

In cases in which considerable time has elapsed since the receipt of the injury and in which the symptoms of septicæmia or peritonitis are present, with marked distention of the abdomen, an attempt to discover and close the perforations of the intestine will almost certainly be fatal, and operative interference should be restricted to the establishment of free drainage of the abdominal cavity through the wound. In cases seen at an earlier period and in which these grave symptoms have not been developed, the probable chances of success are sufficient to justify an operation to repair the injuries. In the present state of our knowledge it cannot be said that either interference or non-interference should be the rule of practice, and the surgeon may be guided by his own convictions and feelings, whether they lead him to seek to do as much good or only as little as possible.

Cholecystotomy.

Mr. W. Mayo Robson (*The Lancet*, November 2, 1889) reported at a recent meeting of the Clinical Society of London, fourteen cases of cholecystotomy; eleven being for gall-stones, one for empyema of the gall-bladder, and two for distended gall-bladder—due in the one case to cancer of the head of the pancreas; in the other to cancer of the bile-duct. All the patients operated on for gall-stones had recovered. Of the other cases, the patient suffering from empyema of the gall-bladder was operated on when apparently dying from acute peritonitis, but after the operation she made a good recovery except for a biliary fistula, which was afterward closed by cholecystenterostomy. The case of cancer of the pancreas had succumbed on the eighth day to a constant oozing of blood from the interior of the gall-bladder and from the suture punctures. It commenced on the day following the operation, and was apparently due to the altered condition of the blood brought on by persistent jaundice of several months' duration. In the case of cancer of the bile-duct, although there was intense jaundice, there was no subsequent bleeding, or other complication; this might possibly be due to the arrest of hemorrhage at the time of operation by ligatures instead of by forcipressure. Of the cases operated on for gall-stones, six patients had sought advice in consequence of the presence of a tumor combined with the usual symptoms. Mr. Robson remarked that he believed many such cases of requently recurring biliary colic would in future be saved the intense suffering and the many dangers of their disease by timely operation. He pointed out that these operations were not always easy, as the gall-bladder

was frequently very small, and could with difficulty be brought to the surface.

In conclusion, he remarked that he believed that with due care cholecystotomy, in the absence of malignant disease, was a procedure attended with comparatively little danger, and that the great relief which the operation conferred amply compensated for the attendant risks.

MR. K. THORNTON said that the question of diagnosis was sometimes a difficult one. In a large majority of distended gall-bladders the diagnosis was simple, but if the swelling were very large, the diagnosis from tumor of the kidney had to be made. Cases with adhesions round the gall-bladder and suppuration were very difficult to make out; it was hard to decide whether they were malignant or simply inflammatory. The cure was very rapid in those cases with thick adhesions. In none of the cases in which he had operated had fistula resulted, nor had he met with a malignant case. With regard to the operation, if the gall-bladder were distended it was simple enough, but if the stone were impacted in the common duct he knew of no more difficult one in surgery.

REMOVAL OF THE APPENDIX VERMIFORMIS.

MR. FREDERICK TREVES asserts (*British Medical Journal*, November 9, 1889) that the treatment of cases of relapsing typhlitis by removing the appendix during the period of quiescence offers, probably, more admirable results than are to be obtained in the treatment of any other form of the disease. The points he suggests in connection with the operation itself are the following:

1. The operation should not be performed until all inflammatory and other symptoms have quite subsided.

2. The incision should be made obliquely from above downward and inward over the cæcal region, its lower extremity ending just external to the epigastric artery. The incision should not be made directly over the appendix or over the dullest region. If it be so placed, a number of adhesions will probably be encountered, and the demonstration of the peritoneal cavity might be difficult. The cæcum or the appendix might be actually adherent to the anterior abdominal wall. The incising of the peritoneum should, therefore, be conducted with the very greatest care. It is well that the parietal cut should open the abdomen at a point just beyond the diseased area, and where no adhesions exist.

3. When the appendix and cæcum are exposed, the area of the operation should be cut off from the general abdominal cavity by sponges. If this plugging with sponges be well carried out, no blood should enter the peritoneal space.

4. All adhesions should be divided by cutting; none should be "broken down." The latter measure is apt to tear the bowel, or, at least, to bare it of peritoneum.

5. The appendix should be lightly clamped close to the cæcum, and should be divided about half an inch from that intestine; it should not be secured by a simple ligature. The mucous membrane should be united by many fine sutures, or by a continuous suture; then the divided outer walls of the process should be brought together by a second row of sutures; it is practi-

cally impossible to bring the serous coats together. To secure still further the orifice, the stump of the appendix might be lightly attached to any adjacent surface of peritoneum.

6. The abdominal wound should be closed; no drain is required.

During the progress of the operation, any adhesions likely to give rise to trouble might be dealt with; this more especially applies to adherent omentum, or to adhesions binding down coils of small intestine. If the appendix be closely adherent to the ureter, or to a coil of the ileum, or be found deeply attached in the pelvis, its removal may be attended with very considerable difficulties. The management of such a case must be left to the judgment of the individual surgeon.

Inguinal Colotomy.

Mr. Harrison Cripps, in the discussion on the treatment of cancer of the rectum, at the recent meeting of the British Medical Association (*British Medical Journal*, October 12, 1889), reiterated his well-known views as to the advantages of the intra-peritoneal or inguinal method of opening the colon, over the lumbar or extra-peritoneal procedure. He summarizes them as follows:

1. The room in front in which the operator has to work is practically unlimited, and he is not hampered by working in the narrow space between the last rib and the crest of the ilium, as in lumbar colotomy. The bowel can be exposed by a clean incision; the extensive bruising and laceration of the subperitoneal fat, often quite unavoidable when searching for the colon from behind, are thus prevented.

2. It is far easier absolutely to identify the bowel from in front, and it is scarcely possible to make the mistake of opening the small intestine, duodenum, or stomach, which not infrequently happens in the lumbar method.

3. In a fat or muscular patient, the bowel can be fixed to the skin with much less tension, partly owing to the mobility of the sigmoid flexure, and partly to the ease with which the skin can be depressed.

4. If the bowel takes an abnormal course, it will scarcely affect the operation, while such a deviation in the lumbar region leads to complete failure.

He makes his incision rather higher than most surgeons, its centre being a little above an imaginary line drawn from the anterior superior spine to the umbilicus. The incision crosses this line at right angles two inches from the anterior superior spine. As soon as the colotomy wound has consolidated, the rectum may be washed out once daily with weak Condy's fluid, followed by a boracic acid lotion, ten grains to the ounce.

Litholapaxy Versus Lithotomy.

Surgeon-major P. J. Freyer reports (*British Medical Journal*, October 12, 1889) a further series of stone cases, 100 operated on by litholapaxy, 32 by lithotomy. His last report was up to August, 1887, and recorded a series of 100 cases of operation for stone without a death. He has now operated in 552 cases, and his opinions, based on such an experience, are, of course, worthy of the most careful consideration. A few of the interesting statistics which he gives may be quoted:

Amongst the 100 cases of litholapaxy there were 66 adults—64 males and 2 females—and the average age of these was forty-eight years nearly, ranging from eighteen to eighty-five. There were 34 children—33 boys and 1 girl—and the average age was seven and three-quarters years approximately, varying from one and a half to fourteen.

The average number of days spent in hospital, or, in the case of patients in private practice, under treatment, was five and a half nearly, the average for children being practically the same as that for adults. The average weight of calculus in the 100 cases of litholapaxy was 184 grains, the average for adults being 221 grains, and that for children 112 grains nearly. In the paper already referred to, he intimated that, influenced by the very excellent results obtained by Dr. Keegan from the practice of litholapaxy in male children, he had abandoned the position of opposition which he, in company with other surgeons generally, had previously maintained in regard to litholapaxy in males below the age of puberty. He then gave details of 16 cases of stone in male children in which he had successfully performed litholapaxy. Since that time 64 male children suffering from stone have come under his treatment, and in 33 of these he has performed litholapaxy, in all with complete success. He attempted litholapaxy in all the cases, but in 29 he found it necessary to have recourse to lithotomy. The proportion in which litholapaxy was not feasible is large, but this, he says, is due to the length of time it takes to procure lithotrites of small size from the good instrument-makers nowadays, so that the smallest lithotrite in his possession previous to September, 1888, was a No. 7. In that month he received a No. 5 lithotrite from Weiss, and since then, out of 13 cases of stone in children, he has disposed of 12 of them by Bigelow's operation, only one case, in which the urethra admitted only a No. 3 sound, being relegated to lithotomy. He adds that lithotomy in the adult has now been practically blotted out of his practice, only 4 out of 131 cases of stone in the adult that have come under his care since January 1, 1886, having been operated on by this method (3 suprapubic and 1 median), litholapaxy having been found feasible in all the other 127 instances; and, after having now performed 49 litholapaxies in male children and 3 in female children without a death, he has no hesitation in saying that he confidently looks forward to lithotomy in children meeting with a similar fate.

[These are very forcible and somewhat surprising conclusions, but they are supported by his results, and, as has been said, deserve to be carefully weighed. The writer may, from personal experience, corroborate Freyer's statement as to the difficulty of procuring small lithotrites from reliable makers, having been told by Weiss during last July that he could not certainly be supplied with one before January, 1890.—Ed.]

The Therapeutics of Chronic Gonorrhœa.

Dr. Wilhelm Fleiner, after mention of the unsatisfactory results obtained in the treatment of chronic gonorrhœa, asserts (*Münchener medizin. Wochenschrift*, October 1, 1889) his belief that the foundation for successful management of these cases has been laid by the investigations of Neisser, Bumm, Deichler, and others, into the effects of gonococci upon the tissues,

and by the direct inspection of the canal by the urethroscope. These teach us, according to Fleiner, that the gonococci, having gained access to the urethra, diffuse themselves from the fossa navicularis backward, penetrating the mucous membrane, setting up a catarrhal inflammation, causing stenosis, etc. If they are not destroyed by injection or other means during the first week then inflammation becomes chronic. Unna then treated it with bougies coated with the following mixture: Nitrate of silver, 1 part; white wax and Peruvian balsam, each, 2½ parts; cocao butter, 95 parts. Caspar used a similar mixture, combining his silver nitrate with lanolin and olive oil, and applying it by sounds grooved longitudinally. Fleiner uses an ointment very like that of Unna, but omitting the balsam, for which he gives the following formula: ℞.—Argenti nitrat., 1.0; ceræ flav., 2.0; butyr. cacao, 17.0. A polished nickel-plated steel sound is used. It is first warmed, then coated with the ointment by drawing it through the mass, which solidifies promptly upon the surface of the sound, and melts again when introduced into the urethra. The immediate result is increased secretion. Forty-one cases, in which there was more or less pronounced urethral contraction, were treated in this manner, and the majority were cured in from four to six applications. In only eight cases were more than ten treatments necessary.

A New Method of Treatment of Deviations of the Spine.

E. Fischer (*Journ. de Méd., de Chirurg. et de Pharm. de Bruxelles*, October 5, 1889) describes his method of correcting certain forms of spinal curvature: In scoliosis of the spinal column localized in the back, and presenting a convexity to the right, the author orders the following procedure, three times daily, each treatment lasting three-quarters of an hour. It consists of placing the arms, flexed at a right angle, upon a cushion laid in a chair in such a manner that the trunk is bent over upon the thighs, and the spinal column is horizontal. A band is then placed around the body at the level of the scoliosis, and a weight attached to it. Children from eight to ten years of age bore, in the first attempts, from 21 to 26 pounds. In the first two weeks, weakly people bore 80 pounds; those physically stronger as much as 200 pounds. The weight should be used as long as the patient can bear it—at first for several minutes only; later, during a quarter of an hour at least. He has also found it beneficial to make the patients walk in this position; they accomplish this by supporting themselves on two chairs connected by a transverse bar. They can in this manner carry from 25 to 40 pounds for a quarter of an hour. After this the patient undergoes a gymnastic treatment, bending the body so that with the arms extended the hands touch the soles of the feet, and then standing erect. Sometimes it is better to do this while holding in each hand a weight of from 5 to 13 pounds.

Further treatment is by means of a bar with weight and bands, continuing at the same time vertical and transverse extension of the curve.

OTOLOGY.

UNDER THE CHARGE OF

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Scarlatinous Inflammation of the Labyrinth.

Toynbee was the first to demonstrate that the majority of ear diseases were caused not by affections in the nervous apparatus of the internal ear, but were due to lesions in the drum-cavity, the physiological function of which is to convey the vibrations of the membrana tympani, the auditory ossicles, and the membrane of the round window, to the perceptive apparatus.

At present about four per cent. of all ear diseases are regarded as nervous. Katz, of Berlin, however, holds that when microscopic examinations of the ear in cases of deafness, are more frequently made, the percentage of nerve-lesions in aural diseases will be shown to be greater. (*Deutsche med. Wochenschrift*, October 10, 1889.)

The two great causes of nervous affections of the ear are epidemic cerebro-spinal meningitis and scarlatina. The latter, however, from its greater frequency and wider dissemination, is oftener the cause of disease of the ear than the former. Statistics of Baden (Switzerland) show that from 22 to 33 per cent. of all scarlatinous patients suffer more or less from aural lesions. Bezold found that in 185 cases of ear disease induced by scarlatina, in 30 instances the entire membrana tympani, with one or more of the ossicles, was destroyed; 59 times two-thirds of the membrane was destroyed; and 13 times a small perforation was found in the drum-membrane. In 5 instances the membrana flaccida, or Sharpnell's membrane, was the seat of the perforation. *This form of the disease is always serious, as it is invariably a symptom of caries in the upper part (the attic) of the drum-cavity.* 44 times granulations and polypi were found; 6 times cicatrices, fistulæ, or active processes were found in the bone of the mastoid portion. In respect to the hearing, 15 times it was found entirely destroyed, and six children were rendered mutes. In 77 cases the hearing distance for low-toned words was less than half a metre, 25 times it ranged from half a metre to two metres, and 14 times it was a little over two metres.

Katz claims that the fact that scarlatina often induces great hardness of hearing or even total deafness, lasting during all the rest of life, leads to the conclusion that in many cases we are confronted, not with ordinary inflammatory lesions in the conducting apparatus, but with deeper processes in the sound-perceptive apparatus in the cochlea. He is emboldened in this view by the fact that some patients hear well, in whose drums are found large perforations, calcareous spots, large cicatrices, and who have even lost some of the ossicles. In many cases the hearing depends upon the greater or less mobility of the stapes in the oval window.

The writer then endeavors to show the nature of the changes in the terminal

nerve-filaments, inducing absolute deafness, by the presentation of the description of changes found in the middle and internal ear in cases of absolute deafness produced by scarlatinous diphtheria. He remarks, parenthetically, that in scarlet fever and in measles, the ear previously affected by catarrh is most quickly attacked. The membrana tympani was found wanting, the malleus and anvil were destroyed, and of the stirrup only the foot-plate was present. The mucous membrane of the drum-cavity was greatly swollen and partly destroyed by diphtheria. The mastoid cells were filled with cheesy pus, but the wall of the transverse sinus, as also the tegmen tympani, was intact. The purulent process in one case had passed to the meninges by the way of the vestibule, the cochlea, and the internal auditory meatus. The acoustic and facial nerves were infiltrated with pus. In some of the scalæ of the cochlea were numerous masses of pus-cells. The periosteum of the vestibule and the cochlea was entirely destroyed; only some of the coarser portions of Corti's organ were found. The soft parts in the vestibule had undergone a similar softening and annihilation. In fact, there was presented that condition termed *panotitis* by Politzer, and which is often found in scarlatina, but without the same anatomical proof offered in this instance by Katz. The necrotic process was undoubtedly communicated from the nasopharynx through the Eustachian tube, to the drum-cavity, and thence through the oval window to the vestibule, the cochlea, and to the trunk of the auditory nerve.

In a second case of inflammation of the labyrinth, induced by scarlatina, valuable microscopic specimens were obtained, which showed on the inner surface of the stapes foot-plate, quite a thick fibrinous layer, which also extended into all the scalæ of the cochlea, and into the sacculi of the vestibule, where there were also found numerous round cells. Corti's organ was not found in a perfect state in any of the scalæ, and Reissner's membrane was covered with round cells. The inflammation had passed from the vestibule to the porus acousticus internus, and in the fibres of the acoustic nerve numerous collections of pus-cells were found. In the mucous membrane of the drum-cavity numerous colonies of streptococci were detected.

In the left ear of this same case, a general and intense swelling of the mucous membrane was found, in which were numerous cystic spaces, and an intense vascular ectasia. "Such a pathological condition explains most clearly how scarlatina may be followed by incurable nervous deafness."

The author maintains what we have long held to, that primary idiopathic inflammations of the labyrinth are extremely rare, if we except the traumatic form, which may easily arise in fractures of the base of the skull. Even the one case cited by Ménière, which unfortunately and unfairly has given his name to a disease, and which he attempted to describe as a *primary* inflammation of the semicircular canals, is *doubtful*, as in this well-known case no disease was found in the brain nor in the spinal cord. Even the cochlea was normal, but in the semicircular canals Ménière claimed that he found a plastic, reddish exudation. But his statement that the patient was deaf during life, and yet he found the cochlea normal, leads to the conclusion that there must have been an error somewhere in the investigation, for the function of hearing is dependent on the cochlea. Furthermore, Ménière could not discover the

cause of death; it could not have been from inflammation of the labyrinth in this instance.

Treatment.—In scarlatinous inflammation of the labyrinth, benefit at least, if not entire restoration, can be obtained in acute cases if the inflammation is limited, and if the treatment is antiphlogistic from the outset. In scarlatina, suppuration of the middle ear may be guarded against by inflation and antiseptic washes of the nasopharynx. Nothing can be done for chronic inflammation of the labyrinth. Iodide of potash is of no use. Of late years, Politzer, Moos, and Wolf have recommended the subcutaneous injection of pilocarpine, with which, however, much more extensive experience must be obtained before valuable conclusions can be drawn.—*Deutsche med. Wochenschrift*, No. 41, 1889.

A Method of Local Medication in Perforative Otorrhœa.

Mr. A. Marmaduke Sheild suggests the employment of a form of suppository or "pellet," containing various medicaments for the ear in chronic otorrhœa. The size of the pellets is that of a swan-shot. The basis of them is oil of theobroma. They melt very quickly. The patient is directed to lie on the side opposite the ear to be treated, and then one of the pellets is allowed to roll down the canal of the affected ear, till it reaches the fundus, when it quickly melts.—*Practitioner*, November, 1889.

Trephining of the Mastoid in Cases of Suppuration of the Middle Ear, as observed in the Surgical Clinic of Zurich.

The above is the title of an inaugural dissertation by Walter Sherrer, Zurich, 1889. A number of cases are given in which trephining of the mastoid was performed in the surgical clinic during the service of Krönlein (1881–1888). Forty-six cases are given, divided into six groups, viz.: 1. Twenty-three cases with perforation of the cortex of the mastoid (fistula). 2. Six cases with necrotic softening of the mastoid process without perforation, in which are two deaths from abscess of the cerebellum and from diphtheria. 3. Nine cases with suppuration in the mastoid cells, with healthy external surface. 4. Three cases of sclerosis of the mastoid process. 5. One case of erosion of the transverse sinus. 6. Four cases of exposure of the dura mater (one death, meningitis originating before the operation).

The method of operation was with hollow chisels. In the after-treatment the dressings were allowed, as a rule, to remain unchanged eight to ten days. After washing out the wound with sublimate solution (1 : 2000) it was tamponaded with iodoform gauze, and the latter brought out at the lower angle of the incision, the upper part of the latter being sutured.

At the first change of dressings the secretion was usually so slight that the iodoform gauze could be omitted, and the wound dressed with antiseptic compresses. Drainage tubes were used only when suppuration in the neck was present. No leaden nail nor leaden tube was employed. Syringing of the external auditory canal was performed only when a copious and offensive discharge was present, which showed no tendency to rapid cessation soon after the operation.

The results compare favorably with those in the aural clinics of Lucae, Schwartze, and others, as published by them. Otorrhœas cured, 80 per cent., of which 65.2 per cent. remained cured. In the three fatal cases, the causes of death were in no way connected with the operation. The length of treatment, compared with that of others, was strikingly short. In twenty-seven acute cases (all cured) the length of treatment was forty-four days; in nineteen chronic cases (ten cured) the average length of treatment was forty days.

The good results are attributed by Scherrer largely to the simple after-treatment, which is to be preferred to the complicated methods in use by others. This conclusion is apparently justified by the result in acute cases, but is not always sufficient in chronic cases, in which careful cleansing of the mastoid cavity must be often kept up for a long time. As Schwartze has said, the operation is often only the beginning of treatment. (Review by Koll, of Aix: *Centralblatt f. Chirurgie*, 14, September, 1889.)

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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Removal of the Hypertrophied Pharyngeal Tonsil.

Prof. Kuhn, of Strassburg (*Deutsche med. Wochenschrift*, October 31, 1889), commends a modification of the rhino-pharyngeal forceps, the cutting portion being a pair of oval rings much larger than the jaws of the forceps commonly used; each ring being crossed with a pair of bars to prevent loss of the tissues severed. Kuhn operates under slight general anæsthesia, and without the guidance of the mirror. He usually removes the entire mass in the first attempt; but sometimes has to introduce the forceps a second time to complete the extirpation. He finds it necessary to keep his patients in bed with ice-bags around the throat for two or three days after the operation.

Extirpation of the Larynx.

Dr. Melville Wassermann, of Heidelberg, has contributed to the *Deutsche Zeitschrift für Chirurgie*, 1889, Bd. 29, Hefte 5 u. 6, the most valuable paper upon the status of this operation that has been published. By correspondence with the various operators he has endeavored to bring the history of all the cases tabulated to their termination on the one hand, or to their progress up to date on the other. His summaries as to the selection of cases, the best operative procedures, the after-management, and the causes of failure accord in the main with the views now generally entertained by those most

competent to express opinion. A prevalent belief that laryngectomy has become of late years a much more successful procedure in carcinoma, is not supported by the statistics here collected. The number of deaths as the immediate outcome of the operation has much lessened, indeed, but the average prolongation of life in operations performed since 1881 is even markedly less than that attained in the operations before that date.

This date has been arbitrarily chosen because it was in 1881 that the subject was so systematically discussed in the International Congress at London, and only in 1881 that the use of iodoform dressings became general. Thus 60.96 per cent. of the patients operated upon before 1881 died within two months, and only 36.35 per cent. of those operated upon since. This gain is to be attributed to improvements in technique and to improvements in dressings.

Of 118 complete laryngectomies for carcinoma, 41 were performed previous to August, 1881, and 77 after that date. Of these patients, 41 died within fourteen days; 22 before August, 1881, 53.65 per cent., and 19 after that date, 24.67 per cent.

Twelve died within two weeks and two months; 3 before August, 1881, 7.31 per cent., and 9 after that date, 11.68 per cent.

Forty had recurrence; 11 in the first category, 26.83 per cent., and 29 in the second, 37.66 per cent.

Eleven died of intercurrent diseases; 2 before 1881, 4.87 per cent., and 9 after 1881, 11.68 per cent.

Six were reported as cured too early; all after 1881, 7.79 per cent.

Eight remained free from recurrence three years after operation; 3 before 1881, 7.31 per cent., and 5 after 1881, 6.49 per cent.

Of these 8, 1 died of catarrhal pneumonia four and one-half years after operation, 1 at four and one-half years, of apoplexy, and 1 at six years, of pleuritis. The remaining 5 continue well at three and one-half, four, four and one-half, five and three-quarters, and seven and one-half years, respectively.

Of 50 cases of partial extirpation for carcinoma, 10 preceded and 40 followed August, 1881.

Fourteen died within fourteen days; 3 before 1881, 30 per cent., and 11 after 1881, 27.5 per cent.

Eight died of complications; 1 before 1881, 10 per cent., and 7 after 1881, 17.5 per cent.

Eleven had recurrence; 3 before 1881, 30 per cent., and 8 after 1881, 20 per cent.

One died of intercurrent disease among those operated on after 1881, 2.5 per cent.

Twelve were reported too early to be regarded as permanently cured; 2 before 1881, 20 per cent., and 10 after 1881, 25 per cent.

Four have been permanently cured; 1 before 1881, 10 per cent., and 3 after 1881, 7.5 per cent.

In a foot-note it is mentioned that the patient operated upon before 1881 (one of Hahn's cases) has a regional recurrence commencing seven and one-quarter years after operation, and therefore is not permantly cured.

One case remains well four years after operation, and one after three and one-half years.

Furthermore, 1 case died three and one-half years after operation, without recurrence, 1 at two and one-half years of catarrhal pneumonia, without recurrence; and 4 are well at two and one-half, two and three-quarters, three and one-half, and four years after operation, respectively.

Sixteen complete extirpations have been practised for disease other than carcinoma; 7 before August, 1881, and 9 afterward.

Five died within two weeks; 1 before 1881, 14.28 per cent., and 4 after, 44.44 per cent.

Two died between two weeks and two months; both before 1881, 28.57 per cent.

Four had recurrence; 2 before 1881, 28.57 per cent., and 2 after, 22.22 per cent.

One died of intercurrent disease after 1881, 11.11 per cent.

Two cases were reported too early; both after 1881, 22.22 per cent.

Two cases were permanently cured; both before 1881, 28.57 per cent. These were cases of sarcoma; one operated on by Gaselli, well seven years after operation, and the other by Bottini, well thirteen and one-half years after operation.

Twenty-one partial extirpations have been practised for diseases other than carcinoma; 8 before 1881, and 13 after 1881.

Two died in the first two weeks; 1 before 1881, 12.5 per cent., and 1 after, 7.69 per cent.

One more died between two weeks and the first two months; after 1881, 7.69 per cent.

Three suffered recurrence; 1 before 1881, 12.5 per cent., and 2 after, 15.38 per cent.

Seven died from intercurrent disease; 5 before 1881, 62.5 per cent., and 2 after, 15.38 per cent.

Five were under observation too short a time; all after 1881, 38.46 per cent.

One is living two and three-quarters years after operation.

Three are permanently cured; 1 before 1881, 12.5 per cent., and 3 after, 15.38 per cent.

For sarcoma, there have been 7 total and 6 partial extirpations.

Of the 7 total extirpations, 4 were performed before 1881.

Death from marasmus occurred in 1 case seven months after operation, 25 per cent.

Recurrence took place in 3 cases; 1 in those operated on before 1881, 25 per cent., and 2 in those after 1881, 66.66 per cent.

Two cases were permanently cured, both operations dating before 1881; 50 per cent.

Of the 6 partial extirpations for sarcoma, 3 were performed before 1881, and 3 after 1881.

One patient died in the first two weeks, before 1881, 33.33 per cent.

Three died of intercurrent disease; 2 before 1881, 66.66 per cent., and 1 after, 33.33 per cent.

Recurrence took place in one instance, 16.6 per cent. of the total; and

permanent recovery ensued in one instance, 16.6 per cent. of the total; the patient remaining well seven and one-half years after operation.

Wassermann discusses the various indications for operation, the differential diagnosis of the disease for which the operation is practised, discusses the prognosis and treatment, presents an analytical table of all cases accessible to him on record and unrecorded, and adds an appendix of cases collected since his article was prepared, with additional tables which alter the percentages a little in some of the groups.

He commends laryngectomy in carcinoma in preference to giving the patient no chance for cure, and he believes that the freedom from pain and the hope of cure inspired for months, or for a year or two, as may be, are fully worth all the risks from submission to the operation.

DERMATOLOGY.

UNDER THE CHARGE OF

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The Treatment of Psoriasis with Potassium Iodide.

Gutteling, following Haslund, treated experimentally twenty-two cases of psoriasis with full doses of potassium iodide (*Weekbl. van het Nederl. Tijdschr. voor Geneesk.*, 1889, i. 17; *Therapeutische Monatshefte*, June, 1889). The highest dose per day was 850 grains; the same patient taking in all, in the course of the treatment, 115 ounces. The average dose was 150 to 300 grains a day, and the observation was made that if such doses failed to benefit, a larger quantity failed likewise. In five patients it was, on account of distressing iodic symptoms, necessary to discontinue the remedy. In several the disease remained stationary and uninfluenced after a certain point had been reached. In five cases complete recovery resulted. Iodide acne was noted in many of the cases; in one purpura, and in another œdema of the legs, and in another rheumatic pains in the limbs. Albuminuria was not observed, nor were any serious heart symptoms noted. The patients, it may be added, were, excepting the skin eruption, free from disease.

Antharobin.

Rosenthal's experience (*Deutsche med. Wochenschrift*, August 22, 1889) with the external use of antharobin in certain diseases has been negative. It was applied in alcohol (antharobinspiritus), twenty per cent. strength.

In several cases of psoriasis, tinea versicolor, and ringworm of the scalp the action was at the best exceedingly slow and unsatisfactory. It stains the skin as well as the linen, and in curative power (psoriasis especially referred to) is not comparable to chrysarobin or pyrogallic acid.

Ichthyol in Cutaneous Diseases.

Series of therapeutical experiments have been made by Kopp (*Münchener medicinsche Wochenschrift*, Nos. 35 and 36, 1889) regarding the value of ichthyol, internally and externally, in the treatment of certain cutaneous diseases. The results may be briefly summarized: In acne rosacea the internal administration, about fifteen grains daily, appeared the more valuable, although improvement, usually temporary, could often be effected by external application of a ten per cent. solution or ointment. In simple acne, its external use was of decided advantage, and in some cases its internal administration was of service. In erysipelas the application of a thirty to fifty per cent. ointment was of benefit. In burns and frost-bites of the first and second degree, the drug was efficacious, used variously in solution or ointment of ten to twenty per cent. strength. In eczema its local application was uncertain, and, upon the whole, without striking results. In several cases of the neurotic type it acted favorably. Given internally, it was useful in those cases in which digestive disturbance was a factor. In prurigo it proved far inferior to other known applications. Pruritus was treated both externally and internally with ichthyol, but the results were not encouraging. At times its application proved palliative. The benefit from its local use in seborrhœa sicca was not sufficiently striking to warrant its employment in preference to the more common and less unpleasant methods. Internally, however, in several instances it appeared to possess some influence in preventing relapses.

Duhring's Disease, and a New Variety of the Same.

Under this caption Unna (*Monatshefte für praktische Dermatologie*, Bd. ix. No. 3) gives his views concerning the dermatitis herpetiformis of Duhring, which he would define as "a non-hereditary, chronic nerve-disease of the skin, not prejudicial to the general health, tending to regular recurrence at variable intervals, more or less universal distribution, and lesions of an erythemato-bullous type." In the diagnosis, first, relapses are looked upon as being absolutely indispensable, and in cases where these do not occur the author would hesitate to make the diagnosis of Duhring's disease. The second most important group of symptoms is that comprising itching and burning (the so-called "paræsthesias" of the author). Thirdly, the polymorphous character of the eruption is a striking feature; and, fourthly, the good general health of the patient is a point to which attention is called.

Unna suggests the name "hydroa" for the disease in place of that given by Duhring, and, further, would make four varieties, viz.: H. grave, H. benign, H. gravidarum, and H. puerorum. The last named is described at length as a new variety, and is characterized by beginning in the early years of life; shows less tendency to polymorphism—being mostly papular—and is accompanied by pain rather than itching. Five cases are referred to.

Erythema Nodosum and Allied Eruptions.

Baumler, of Freiburg (*Wiener klin. Wochenschrift*, No. 45, 1889), who believes erythema multiforme and erythema nodosum to be forms of the same disease, discusses erythema nodosum and its possible causes, and expresses the opinion that it is to be regarded as an infectious disease, a view that has of late years been gaining ground in Germany and France. As reasons, the author gives—the often severe general character of the affection; the high, long-continued fever of a remittent type; the inflammation of the skin and mucous membrane sometimes leading to the formation of pustules; the affection of the joints, sheaths of the tendons, serous membranes, and endocarditis. With such manifestations the erythematous or nodose varieties of the disease may bear the closest resemblance to other well-known infectious diseases, such as varicella, variola, and syphilis, with which they may be (and have been) confounded, as Hutchinson and Lewin have in former years shown. Reference is made to the observations of Uffelman and Oehme, in 1876, who attempted to show some relation between erythema nodosum and (the now recognized infectious disease) tuberculosis.

Elephantiasis and its Treatment by Electricity.

Silva Araujo (*Atlas des Maladies de la Peau*, 3me fascicule, 1889), of Rio de Janeiro, gives his experience, extending over many years, with this intractable disease, so common in Brazil. Four hundred cases have been under observation and treatment. Electricity, in the form of the continuous and interrupted currents and with electrolysis, together with massage, and pressure by means of the rubber bandage, have given satisfactory results. (The author's views as to the value of the electric current in the treatment of this disease were published as early as 1877.) A series of six photographs of a patient portraying elephantiasis of the legs, taken at intervals from 1879 to 1885, shows the marked improvement which took place from year to year, from which it appears that two years after the beginning of the treatment cure practically resulted. Judging from the photographs, the results are eminently satisfactory. The author insists upon the point that the remedies must be employed for a long time and perseveringly. Apart from the matter pertaining to treatment, the essay contains interesting statistics.

Pruritus Cutaneus Universalis.

Wertheimber (*Münch. med. Wochenschrift*, No. 44, 1889) speaks favorably of the value of salicylate of sodium in two severe cases and one light case of this form of the disease, the dose being one ounce, three times daily, of a three per cent. solution.

Lupus Vulgaris; its Treatment with Balsam of Peru.

Saalfeld, of Berlin (*Deutsche med. Wochenschrift*, November 7, 1889), in view of the favorable results obtained by Landerer in the treatment of various tuberculous affections with balsam of Peru, was led to employ in it lupus vulgaris. The crusts are to be removed with soap and water and the

remedy applied twice daily with a brush. The results were, up to a certain point, satisfactory; the author believing that the balsam, more than any other known local remedy, as it were, prepares the disease for the more radical methods of treatment, such as scraping and the galvano- and thermo-cautery.

OBSTETRICS.

UNDER THE CHARGE OF

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Retroversion of the Uterus in Pregnancy.

Martin (*Deutsche med. Wochenschrift*, No. 39, 1889) has found in 24,000 women 121 cases of retroflexion of the uterus persisting during pregnancy. In 27 of these cases pregnancy occurred, although the deformity was congenital, and affections of the endometrium, tubes, and ovaries were not uncommon. A case is cited in which the patient suffered for three and a half years with congenital retroflexion and gonorrhœa, but after recovery she conceived and bore a healthy child.

It was usually true that sterility in these cases depended upon a diseased endometrium or stenosis of the tube, and not upon the congenital retroflexion.

In 94 cases the retroflexion persisted after repeated pregnancies; 9 of these patients wore pessaries at the time when conception occurred. A large portion of pregnancies in retroflexed uteri with beginning incarceration never come to the physician's notice, but undergo spontaneous reduction. When this does not occur the most significant symptom is dysuria.

Reposition of the retroflexed uterus should always be done if spontaneous restitution fails; if necessary, the uterus should be amputated, or removed *per vaginam* if pregnancy be not advanced.

The Origin of Placenta Prævia, with an Illustrative Case.

Kaltenbach (*Centralblatt für Gynäkologie*, No. 40, 1889) reports a carcinomatous uterus at four months' pregnancy, in which the cervix was closed by the cancer, the internal os closed, the placental site covering more than half the periphery of the ovum. Over the internal os was a cup-shaped space where the ovum was not joined to the uterine wall. This was covered by a lobe of placenta developed within the decidua reflexa in the inferior pole of the ovum. This case corroborates the observation of Hofmeier, that placenta prævia is placenta developing within the decidua reflexa of the inferior pole of the ovum. The most frequent cause for this development is endometritis of the body of the uterus.

The Diagnosis of Placenta Prævia by Palpation.

Spencer (*Transactions of the London Obstetrical Society*, vol. xxxi., 1889) reports in detail seven cases of placenta prævia in which he diagnosticated, by abdominal palpation, the presence of the placenta in, or its absence from, the front wall of the lower uterine segment, the diagnosis being subsequently verified by internal examination. The cases were head presentations in multiparæ, before pains were present and the membranes had ruptured; no anæsthetic was used.

In three cases the exact site of the placenta on the front wall of the lower segment was determined; in two cases the placenta was felt when by vaginal examination it could not be found. The absence of the placenta from the anterior wall was diagnosticated in four cases.

The patient should lie on her back for these examinations, the bladder having been emptied; the examination should be gentle, made in the absence of pains, prolonged for several minutes, or repeated if needed. When the placenta is in front of the head it is felt a spongy mass between the fingers and the head. Its edge feels like the segment of a circle within which the touch is obscured; outside the child is plainly felt. Impulses to the head are not clearly felt through the placenta; impulses to the head through the placenta are distinctly felt where the placenta is absent.

Deep Incision of the Cervix in Delayed Labor.

Dührssen (*Münchener med. Wochenschrift*, No. 43, 1889) reports ten cases of labor delayed by rigidity of the cervix, which imperilled the child's life. As these cases, if left without interference, result in fœtal death and septic maternal infection, incision of the cervix to the level of the vaginal attachment was practised. The os and cervix were tamponed with iodoform gauze to check bleeding and prevent infection. All the mothers recovered, although three had septic infection; eight of the children survived. This procedure is especially demanded in old primiparæ, in whom the mortality rate is usually high.

A Critical Study of 206 Forceps Applications in the Dresden Clinic.

Münchmeyer (*Archiv für Gynäkologie*, Band xxxvi., Heft 1) collects 206 forceps applications in 7322 labors in clinical records at Dresden, of which 187 were low forceps, and 19 high forceps applications. The average frequency of application was 2.8 per cent. The maternal mortality was 7 (3.4 per cent.), and was in no case attributable to the forceps only. 119 women (57.7 per cent.) suffered extensive lacerations of the genital canal; 141 (68 per cent.) had no fever during the puerperal state; 20 (9.7 per cent.) had mild fever; 45 (21.8 per cent.) had high fever, and 7 (3.4 per cent.) had very perceptible parametritis. Of the 206 children, 35 died (17 per cent.), and 25 (12 per cent.) were fatally injured by the forceps; 171 (83 per cent.) left the clinic in good health. Of the 19 mothers in whom the high forceps operation was done none died, 8 (42 per cent.) had fever; of the 19 children 5 perished (21 per cent.), and more suffered severe lacerations. From these results Münchmeyer concludes

"that the forceps is the bloodiest of all obstetric instruments because of the lacerations it causes." The high application of the forceps is deemed advisable only in practised hands, and the low application may easily result in lacerations of the vagina and cervix, although the perineum remain intact, which may cause fatal hemorrhage. The forceps should be used as rarely as possible; in 1887 it was applied but 27 times in 1387 cases; in 1888, 25 times in 7369. Severe hemorrhage after forceps births is usually caused by laceration of the vagina and cervix, and should be treated at once by suture.

It is of interest to note that 71.9 per cent. of these patients were primiparæ, 28.1 per cent. multiparæ; 69 had contracted pelves with antero-posterior diameter 3½ inches, 26 highly contracted pelves with diameter as small as 2.6 inches. Forceps applications were permitted only when measures to render uterine contractions efficient had failed. Weak pains, or the cessation of pains never justified the forceps' use; positive danger to mother and child was the only valid reason for their application. The instrument used was Nägele's; no indication for axis-traction forceps was recognized.

Cæsarean Section and Oöphorectomy for Rachitis.

O'Sullivan (*Australian Medical Journal*, September 15, 1889) reports a case of pregnancy in a rachitic woman whose pelvis measured, antero-posteriorly, two inches. Cæsarean section was performed, the constricting bandage about the cervix prevented bleeding. The uterus was turned out of the abdomen and incised and the child was extracted. Tubes and ovaries were removed. The uterine wound was closed with catgut, the abdominal with silver wire. Mother and child recovered.

Meyer (*Ibid.*) reports a Cæsarean section for rachitis, followed by death from peritonitis; and

Hooper (*Ibid.*) adds a case of pregnancy and carcinoma of the cervix, in which it was too late to operate. After the spontaneous birth of a macerated fœtus, the mother perished from exhaustion and sepsis.

Cæsarean Section for Fibroma of the Uterus.

Tuffier (*Annales de Gynécologie*, November, 1889) has recently performed Cæsarean section upon a patient six months pregnant: the indication for operation was severe uterine pain; nausea; weakness; elevation of temperature and threatened exhaustion. Examination revealed multiple fibromata of the uterus the cause of this condition. The operation was not especially difficult; a line of incision was taken which did not traverse the fibromatous mass; there was no hemorrhage and but little shock; the child was born living. Twenty-four hours after operation the patient died in collapse, without pain, hemorrhage, fever, or vomiting. Post-mortem examination revealed pyelo-nephritis the cause of death, which resulted from an extraordinarily large fibromatous mass which filled one of the broad ligaments and compressed the ureter.

Pregnancy in Uterus Bilocularis; Porro Operation; Recovery.

Riedinger (*Wiener klinische Wochenschrift*, No. 45, 1889) describes a case of uterus bilocularis in which a fœtus became imprisoned as follows: The

patient had previously been treated for dysmenorrhœa by discission of the cervix. Normal pregnancy followed and labor pains began, but no progress was made. Examination revealed an unimpregnated uterus which could be easily entered. A fully developed fœtus lay in a muscular sac to the left of the uterus. No communication with the fœtus was found. When labor had fairly begun uterine amputation was performed. The fœtus was delivered readily on incising the uterus. Mother and child recovered. The examination of the uterus showed a bilocular womb, with no apparent communication between the cavities. Regarding the occurrence of menstruation and conception in this blind cavity, no adequate explanation is given. The only analogy is uterus bicornis, or with rudimentary horn.

Ectopic Gestation.

Tait (*Provincial Medical Journal*, November 1, 1889) regards ectopic gestation as largely tubal, and divides the cases into interstitial (ovum in the tube at its uterine end); infundibuliform; and pregnancy in the tube proper. The last is most common, and its rupture results in hemorrhage into the broad ligament, or into the peritoneal cavity. In the former, pressure of the layers of the ligament stops the bleeding, the ovum disintegrates, and the whole becomes a pelvic hæmatocele which is usually absorbed. In the latter, there are no such pressure and confinement of the hemorrhage, but bleeding is unchecked and fatal. Occasionally the fœtus develops to full size in the peritoneal cavity. The treatment consists in letting the hæmatocele alone; in performing laparotomy for intra-peritoneal hemorrhage, and ligating the tube; a fœtus in the abdomen should be removed.

The Treatment of Rupture of the Uterus with Complete Escape of the Fœtus.

Schaeffer (*Münchener med. Wochenschrift*, Nos. 42 and 43, 1889) concludes, from the comparative study of various methods of treatment in this complication, that laparotomy is most successful in cases where the fœtus with intact membranes escapes into the abdominal cavity through the scar of a previous Cæsarean section or during a brief labor. Laparotomy is successful in 60 per cent. to 77 per cent. of cases in which the fœtus with ruptured or unruptured membranes escapes through a uterine scar during labor; when the fœtus escapes during pregnancy and decomposition and suppuration result, 60 per cent. recover by laparotomy. When rupture of the uterus and complete escape of the fœtus occur during labor, with the entrance of amniotic liquor in the abdomen, 44 per cent. recover after laparotomy when no other operation has been previously attempted. But 25 per cent. recover when other measures have first been unsuccessfully tried, and when the vesico-uterine pouch has been opened. When the rupture opens the vaginal fornices, but one case has recovered, and that by uterine amputation. When the abdominal viscera, with or without perforation, prolapse into the uterine rent, about 30 per cent. recover by operation. Beginning peritonitis was diagnosticated by laparotomy in six cases; 85 per cent. recovered by uterine amputation.

Uterine amputation by Porro's method gives especially good results when cervix and vagina are extensively lacerated; when peritonitis has begun; when the anterior wall of the uterus ruptures and amniotic fluid escapes: its results are less favorable when labor is prolonged with escape of amniotic fluid; when other operations have been attempted, uterine amputation gives better results than laparotomy. In general, laparotomy saves 50 per cent. of cases. Regarding the location of the rupture, 60 per cent. of ruptures at the fundus recover; 50 per cent. of ruptures of the anterior wall (which are most frequent) and 34 per cent. of ruptures of the posterior wall.

Entrance of normal amniotic liquid into the peritoneal cavity does not greatly militate against recovery; good contraction of the uterus is especially necessary. Manipulation of the rupture, entrance of macerated fœtus and decomposed amniotic liquid into the abdomen, render the prognosis unfavorable.

Schaeffer reports the case of a multipara, face presentation, rupture of the uterus following efforts at forceps delivery. Admitted to hospital (Munich) three hours after rupture. Examination revealed the fœtus dead; pelvis normal; a longitudinal and transverse rent in the anterior uterine wall, with separation of the peritoneum; a sub- and retro-peritoneal hæmatoma; the fœtus entirely in the peritoneal cavity; the urine bloody. Fœtus and placenta were removed by laparotomy; an extra-peritoneal effusion of blood was found extending to the kidneys; in the anterior uterine wall a rent two and three-quarters inches long extending obliquely to the left; the peritoneum was torn transversely. It was found necessary, to check hemorrhage, to amputate the uterus, remove tubes and ovaries, and stitch peritoneum and decidua over the stump, which was dropped. Death followed on the seventh day in collapse and vomiting. Post-mortem examination revealed the source of the fatal sepsis; blood from a subperitoneal extravasation near the cæcum had been infected through rents in the peritoneum when the child escaped from the uterus. From this focus infection had invaded the abdomen.

Rupture of the Uterus; Supra-vaginal Amputation; Recovery.

Coe (*New York Medical Record*, November 2, 1889) reports the case of a robust woman, aged twenty-three years, in whom rupture of the uterus had occurred two hours before he was summoned. The patient was in collapse, and could not be removed from a dirty tenement. Laparotomy revealed rupture through the left broad ligament and lower uterine segment; the head was in the left iliac fossa. In the absence of an écraseur a rubber tube was drawn about the cervix and secured with artery forceps, and the uterus amputated. The left utero-sacral ligament had been torn and was secured; the torn peritoneum was stitched with catgut, and the abdomen was flushed with hot water. The stump was secured in the wound with knitting-needles.

Recovery was complicated by fever; diarrhœa; hæmatocele of the left broad ligament, and cervico-vesico-vaginal fistula. The patient got up at the end of the fourth week, and the abdominal wound closed at the end of the fifth week.

Coe considers uterine amputation the only procedure offering a chance for recovery in uterine rupture after prolonged and unsuccessful attempts at

delivery. He appends a table of thirteen cases by different operators, showing a maternal mortality of $69\frac{2}{10}$ per cent., and fœtal mortality of 100 per cent.

Extirpation of the Uterus for Retained Placenta with Sepsis.

Roosenburg (*Nederlandisch Tidschrift voor Geneeskunde*, 21, 1889) reports the case of a patient who miscarried at six months, the placenta being retained. Septic infection followed, and, failing to remove the placenta, Roosenburg extirpated the uterus through the vagina as a last resort. In two hours after operation the patient's temperature fell from 105° to 99° F. and remained; the pulse steadily improved; recovery was complete in fifteen days. The placenta was tightly adherent to the uterus, and the uterine wall was in beginning gangrene.

Curetting the Uterus in Puerperal Infection.

Porak (*Journal de Médecine de Paris*, No. 38, 1889) has collected 326 cases of abortion, in which fever occurred in 10 per cent. and death in $\frac{3}{10}$ per cent. Delivery was artificial in 25 cases, 16 of which had no complications. Treatment of these cases was prophylactic asepsis in the great majority. In a few cases in which intrauterine douches were unsuccessful the curette and douche were employed, but generally to no advantage. Porak believes that the curette, if used at all, should be used promptly, and that it is generally inferior to the simple douche; occasionally it gives brilliant results.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

Fixation of the Retroflexed Uterus after Replacement, according to Schücking's Method.

Thiem (*Centralblatt für Gynäkologie*, October 19, 1889) describes the operation as he is accustomed to practise it, with a slight modification of the original technique. He first introduces a catheter into the bladder and pushes it to the left, where it is held by an assistant. Schücking's needle is then introduced into the uterus and is passed through the anterior fornix, is threaded, and is withdrawn, the ligature being tied in the vagina and left *in situ* for a few days. A Thomas's pessary should be introduced at once to support the uterus. The operation is not suitable for cases of prolapsus. Schücking's and the writer's recent cases (thirty-six) have all been successful. In one instance two years havs elapsed since the operation, and the uterus still remains

in good position. One patient has had a normal labor without a recurrence of the displacement.

The Indications for Dilatation of the Cervix Uteri.

Stocker (*Frauenarzt*, October, 1889) concludes a paper on this subject with the following deductions: 1. The cervical canal should be dilated in women who have passed the menopause, and have hemorrhage which is clearly of intra-uterine origin; 2. In younger women in whom no sufficient cause for the hemorrhage can be discovered in the adnexa; 3. Whenever the curette is used; 4. In all forms of chronic endometritis requiring thorough treatment.

The writer prefers Vulliet's method of dilating the uterus, by using tampons of iodoform gauze.

Ventral Fixation of the Prolapsed Uterus.

Müller (*Centralblatt für Gynäkologie*, October 26, 1889) has performed this operation in twelve or fifteen marked cases of prolapsus with unsatisfactory results. In most cases there was sooner or later recurrence of the displacement, usually due to stretching of the adhesions to the anterior abdominal wall. In a few instances the wall itself was drawn down, forming a cup-shaped depression.

Plastic Operations for the Cure of Prolapsus Uteri.

Fehling (*Centralblatt für Gynäkologie*, October 26, 1889) does not approve of performing anterior colporrhaphy simply as an adjunct to other operations on the cervix and vagina. He thinks that a better result is obtained by doing the operations at different times, keeping the patient in bed for four or five weeks if necessary; this allows the uterine supports time to recover their tone and thus insures retention of the organ in its normal position. In performing anterior colporrhaphy he denudes two oval surfaces on the anterior vaginal wall, half an inch apart, the long axes of which converge toward the cervix; these are brought in contact with wire or silk sutures. Colpo-perineorrhaphy is performed at a second sitting. The writer reported sixteen cases, all of which were successful.

Normal and Abnormal Changes of Position in Ovarian Tumors.

Freund (*Centralblatt für Gynäkologie*, October 26, 1889) says that while an ovarian tumor is small it lies normally behind the uterus, elevating that organ slightly and pushing it somewhat toward the opposite side of the pelvis. The pedicle lies on the anterior aspect of the tumor, and is not twisted. In the second stage of its growth the cyst rises into the abdominal cavity and moves forward until it lies in contact with the anterior abdominal wall. The uterus is pushed backward, but is not retroflexed, and the bladder is compressed from above; the pedicle now lies behind the tumor, and is somewhat twisted.

Deviations from this normal course are noted in the following cases: 1. Intra-ligamentous cysts, or those which are rendered immovable by deep intra-pelvic adhesions; 2. Fixation of the uterus by adhesions; 3. Double ovarian tumors, which mutually prevent change of position; 4. Firm and

unyielding abdominal walls, which do not relax as the tumor presses against them.

Statistics of Total Extirpation of the Uterus at the Dresden Clinic.

Münchmeyer (*Frauenarzt*, October, 1889) stated at the recent meeting of the German Gynecological Society that between 1883 and May, 1889, there were 110 cases of hysterectomy, 80 being for cancer. Of the latter, four patients succumbed to the operation, while of the remainder 62 were still living, only three of whom had a recurrence.

Freund, in commenting upon this report, stated that in 1878, he had removed a cancerous uterus from a patient who was still perfectly well, and Olshausen said that he had one who had no recurrence twelve years after amputation of the cervix uteri for epithelioma.

The High-tension Faradic Current in Gynecology.

Bröse (*Centralblatt für Gynäkologie*, October 19, 1889) recommends this agent highly for the relief of pain due to oöphoritis and perioöphoritis. The anode should be introduced into the vagina, while the cathode is a large plate placed on the abdomen. Bröse uses a bipolar electrode. The *séance* should be prolonged until the sensitiveness of the ovary is noticeably diminished. From four to thirty-five applications may be required. The effect of this treatment is permanent. The writer reports twenty-five cases of oöphoritis and perioöphoritis, twenty-one patients being cured, and two improved. The faradic current is useful in cases of subinvolution and dysmenorrhœa, but has no effect on pelvic exudates, though it relieves the accompanying pain.

Perineotomy; a New Method of Removing Subperitoneal Growths.

Sänger (*Archiv für Gynäkologie*, Bd. xxxv. Heft 3) had a case of dermoid cyst situated in the *cavum subperitoneale*, which he reached and removed from below in the following manner: A vertical section was made in the perineum, extending from a point an inch behind the right labium majus to the right of the anus; the attachment of the levator ani was divided, after opening up the ischio-rectal fossa, and lastly the pelvic fascia, allowing direct access to the subperitoneal space, from which the growth was readily shelled out. The wound was plugged with iodoform gauze and healed rapidly. The writer perfected the operation by experiments on the cadaver, and found that he could easily reach the pelvic cavity through a vertical incision three inches in length beginning just behind either labium and extending downward midway between the anus and the tuber ischii, the levator ani being first divided; subperitoneal tumors, hæmatomata, or exudates could be reached in this way without difficulty.

This operation should be distinguished from that proposed by Zuckerkandl (see The American Journal of the Medical Sciences for December, 1889) for the extirpation of the cancerous uterus. Sänger performed the latter on six cadavera and found it so difficult that he did not think that it would ever become popular. Hegar had proposed opening

Douglas's pouch through an incision extending from the tuber ischii to the tip of the coccyx.

Hegar, in discussing the paper, called attention to the difference between perineotomy, exsection of the sacrum, and the parasacral incision of Wölffler. He had successfully exsected the sacrum in order to reach Douglas's pouch and remove diseased tubes and to open pelvic abscesses. The wound healed well and there was perfect drainage.

The Treatment of Pelvic Abscess.

Wiedow (*Archiv für Gynäkologie*, Bd. xxxv. Heft 3) says that it is easier to detect fluctuation in extra- than in intra-peritoneal abscesses. Exploratory puncture is dangerous; it is safer to rely on the general symptoms of suppuration. If an abscess lies just beneath the skin, it should be opened thoroughly and drained, while if it is deep within the pelvis, a counter-opening should also be made. To reach deep-seated abscesses it may be necessary to resect the sacrum, to open up the ischio-rectal fossa, divide the levator ani muscle and to split the pelvic fascia (Hegar's method), or to follow the plan suggested by Zuckerkandl. If the peritoneum is healthy and can be pushed upward, it may be advisable to reach the abscess by an incision parallel with Poupart's ligament. It is useless to try to close abscesses with fistulous tracts, except by attacking the focus directly and draining the sac in some other direction.

The Flap-splitting Operation on the Perineum.

Sänger (*Archiv für Gynäkologie*, Bd. xxxv. Heft 3) reported, at the last meeting of the German Gynecological Society, the results of his experience with Tait's operation for the repair of lacerated perineum. He has operated in seventy-one cases, ten times for complete laceration. Anterior colporrhaphy was also performed in twenty-four cases, and posterior colporrhaphy in ten, both operations being done in sixteen. The lacerated cervix was frequently closed at the same sitting. In no case did the perineum fail to unite, though perineo- and recto-vaginal fistulæ were noted in four instances. The parts were restored to their normal condition without loss of tissue. The writer rejects catgut entirely as a suture, and has had better results with silver wire than with silkworm gut.

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